

RAILWAY AGE

THE STANDARD RAILROAD WEEKLY FOR ALMOST A CENTURY

JULY 23, 1951



These 13 blast plates mean bad luck for corrosion...

THEY ARE
BYERS
WROUGHT IRON

Because locomotive blast gases give a terrific beating to bridges that overpass railroad tracks, Pennsylvania Railroad engineers used a time-tried method of shielding the reconstructed Babcock Street Viaduct, in Buffalo, against damage by installing blast plates of genuine wrought iron. More than 35 tons of $\frac{1}{2}$ " Byers Wrought Iron plate was used. The illustrations above show part of the 13 blast plates installed on the bridge.

Blast gases contain moisture and carbon or sulfur compounds, which combine to form aggressive acids. The ash and cinder that are expelled at high velocity have a "sand blasting" action that grinds away the surface of the bridge members. Finally, the gases cause rapid and extreme variations in temperature. All this results in a rapid reduction of section, whether

the members are concrete or metal, and to ultimate extensive repairs.

Genuine wrought iron is almost universally used for protection, because its unusual resistance to these conditions has been demonstrated over long periods. Some of the most impressive evidence is found in service records of old genuine wrought iron railroad bridges, which withstood the attack of blast gases for many years.

You'll find some helpful information on the use of genuine wrought iron for blast plates in our bulletin, **WROUGHT IRON FOR BRIDGE CONSTRUCTION**. Ask for a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.



Why
Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unusual fibrous structure of genuine wrought iron—which is responsible for the unusual corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

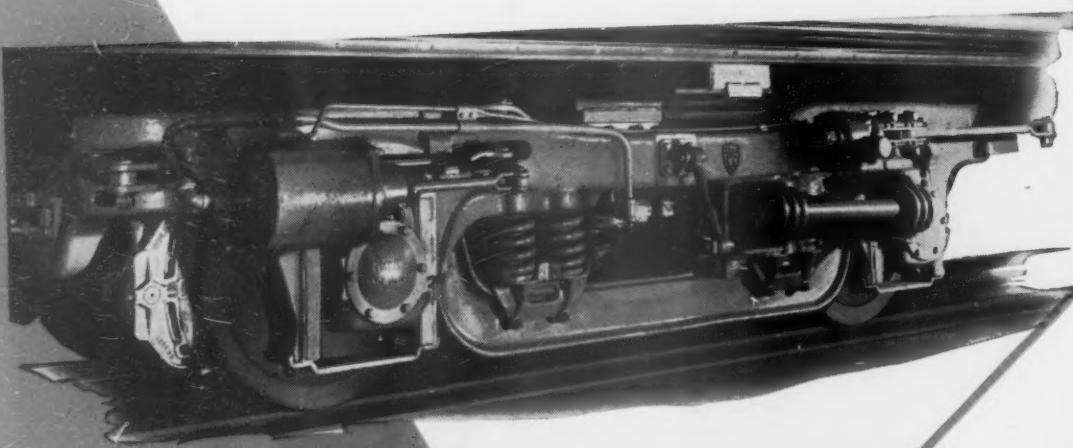
BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON
WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS

SELECTED SOURCE OF QUALITY ALLOY AND STAINLESS STEEL

BURLINGTON'S

New Gallery-Type Suburban Cars Have



Commonwealth
4-wheel truck
for suburban cars.

COMMONWEALTH TRUCKS



In a new approach to streamlined commuter service in the Chicago area, the BURLINGTON, as part of their commuter service betterment program, has recently placed in service thirty new 85-foot gallery-type suburban cars which seat from 145 to 148 passengers.

Smooth, easy riding of these cars is assured by COMMONWEALTH all-coil spring 4-wheel trucks equipped with bolster anchors to cushion shocks, and bolster roll stabilizers to control car body roll. The COMMONWEALTH one-piece Cast Steel Truck Frames and Bolsters assure maximum strength with light weight and unusually long service life with a minimum of upkeep cost.

Specify COMMONWEALTH Trucks for your passenger equipment.



GENERAL STEEL CASTINGS

Granite City, Illinois

Eddystone, Pennsylvania



Don't Scrap PROFITS- from Scrap!

Today your DORMANT SCRAP* means more steel to help meet all-time high defense and domestic demands. Your country NEEDS it!

Today your DORMANT SCRAP* commands high prices.

HOW TO TURN SCRAP INTO MONEY... with an organized dormant-scrap round-up in your plant:

- 1 Appoint a top executive with authority to make decisions to head the salvage drive.
- 2 Organize a Salvage Committee and include a member from every department.
- 3 Survey and resurvey your plant for untapped sources of dormant scrap. Encourage your employees to look for miscellaneous scrap and report it to the committee.
- 4 Sell your entire organization on the need to scrap unusable material and equipment.
- 5 Prepare a complete inventory of idle material and equipment. Tag everything not in use.
- 6 Start it back to the steel mills by selling it to your regular scrap dealer.

7 KEEP AT IT!

* Your DORMANT SCRAP is any obsolete, broken or wornout and irreparable machinery, tools, equipment, dies, jigs or fixtures, etc., that may encumber your premises. These, in the language of steel, are scrap, vital to steel production, and hence convertible into cash.

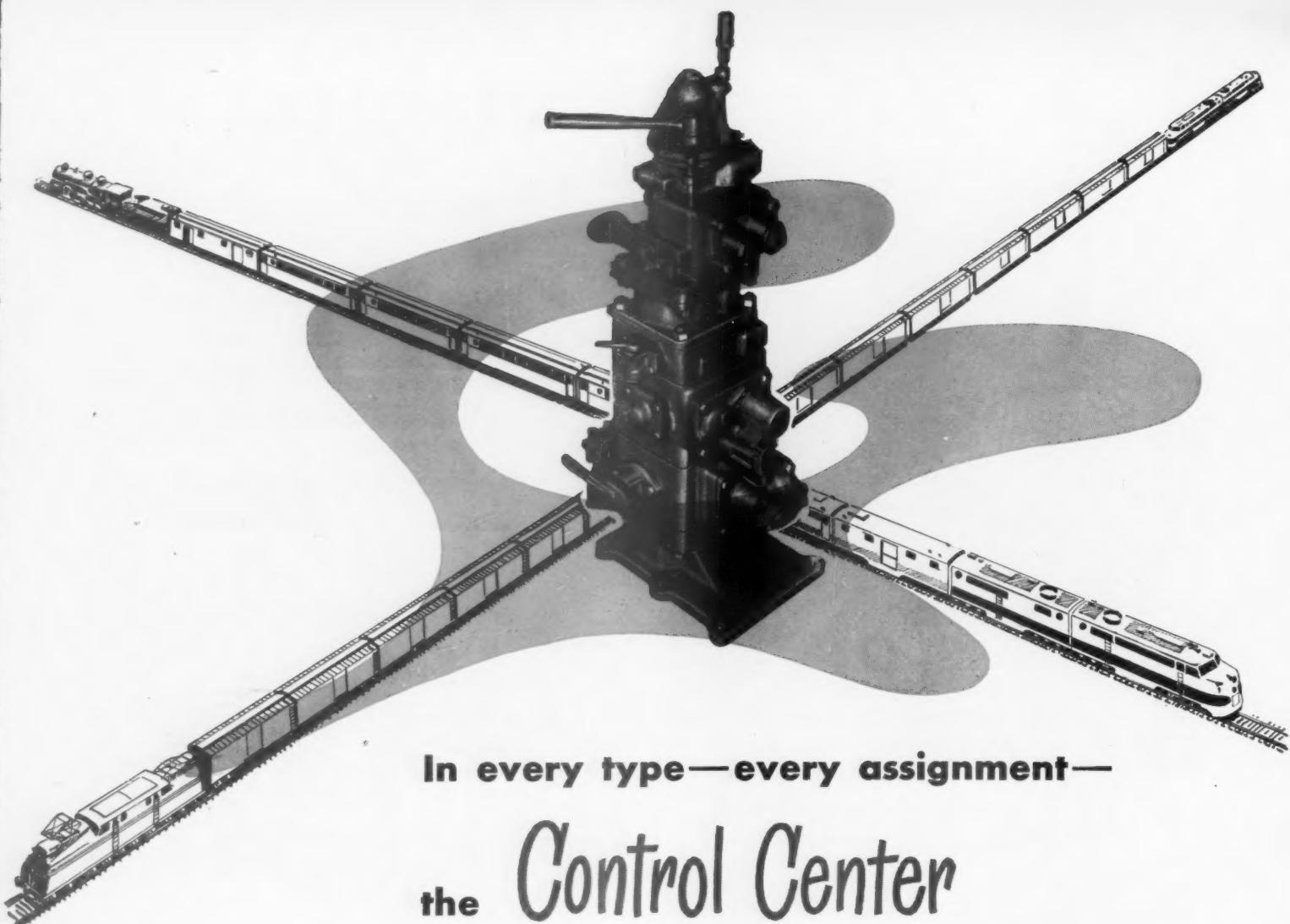
Steel is normally made from scrap and new pig iron in about a 50-50 ratio. The use of scrap means *better steel, faster* . . . because scrap has already undergone one refining process. Today under pressure of domestic and defense demands, the steel industry is consuming purchased scrap at the rate of 100,000 tons per day . . . an all-time high. Your dormant iron and steel scrap is *urgently* needed.

Round-up and sale of your dormant scrap NOW will benefit you, all steel users, and our country by:

- 1 Keeping the steel furnaces producing at their highest rate in history.
- 2 Conserving our vital iron ore reserves. The more scrap used in steelmaking, the less ore needed.
- 3 Making better steel, faster.



INLAND STEEL COMPANY
38 South Dearborn Street • Chicago 3, Illinois



In every type—every assignment—

the Control Center

of modern road locomotives is the

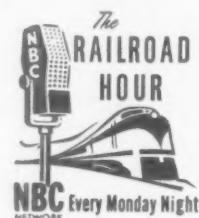
24-RL

Passenger or freight, diesel, steam or electric—no matter what type of modern motive power you are buying or building, Westinghouse 24-RL brake equipment will provide any and all the braking functions required.

The 24-RL is a composite brake equipment, so designed that supplementary control functions can be incorporated at any time by inserting supplementary parts.

Train control, safety control, overspeed features, and electro-pneumatic brake control for passenger service can be added in various combinations with no alteration in the basic piping. Because of this flexibility, this equipment is particularly well suited to modern "assembly line" production of locomotives.

Details of various combinations are given in Catalog No. 2058, sent on request.



Westinghouse Air Brake Co.

WILMINGTON, PA.



RAILWAY AGE

With which are incorporated the Railway Review, the Railroad Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office and Trade Mark Office in Canada.



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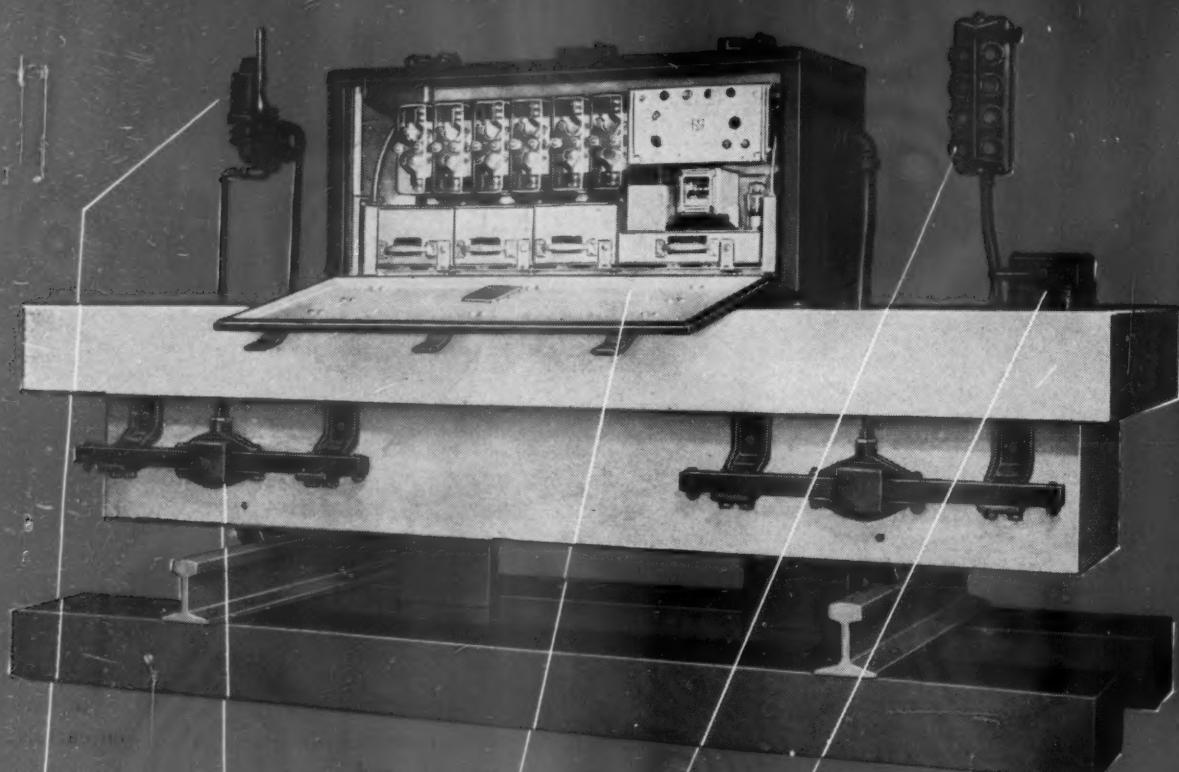
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 Railway Age Railway Mechanical & Electrical Engineer Railway Engineering & Maintenance
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 Railway Engineering & Maintenance Cyclopedia American Builder
 Marine Engineering & Shipping Review Marine Catalog & Buyers' Directory
 Books covering transportation and building

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TYPE E Cab Signal System

ENGINE-CARRIED EQUIPMENT

RECEIVER

Picks up, by induction, electric impulses from the current in the rails...transmits them to the control equipment box.

CONTROL EQUIPMENT BOX

Consists of a filter, amplifier, decoding units, relays, etc., to filter, amplify and decode the impulses from the receiver for control of the cab signal and whistle.

CAB SIGNAL

In plain view of the engine crew, the cab signal continually indicates track conditions ahead by means of color-light or position-light aspects.

WHISTLE

Within hearing range of the engineman, the whistle sounds a warning whenever the cab signal changes to a more restrictive indication.

ACKNOWLEDGING SWITCH

Convenient to the engineman, the acknowledging switch provides a means for silencing the warning whistle.

"Union" Type E Cab Signal equipment can be furnished for two, three, or four-indication signaling. For full details write to any of our district offices.

UNION SWITCH & SIGNAL

DIVISION OF WESTINGHOUSE AIR BRAKE CO.

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NEW YORK

CHICAGO

PENNSYLVANIA

ST. LOUIS

SAN FRANCISCO

WEEK AT A GLANCE

CURRENT RAILWAY STATISTICS

Operating revenues, five months	
1951	\$ 4,180,123,254
1950	3,444,524,886
Operating expenses, five months	
1951	\$ 3,297,621,471
1950	2,765,378,614
Taxes, five months	
1951	\$ 476,980,422
1950	353,765,743
Net railway operating income, five months	
1951	\$ 321,485,648
1950	253,110,891
Net income, estimated, five months	
1951	\$ 197,000,000
1950	133,000,000
Average price railroad stocks	
July 17, 1951	51.00
July 18, 1950	42.67
Car loadings, revenue freight	
27 weeks, 1951	20,505,650
27 weeks, 1950	18,438,660
Average daily freight car surplus	
Week ended July 14, 1951	49,810
Week ended July 15, 1950	4,733
Average daily freight car shortage	
Week ended July 14, 1951	5,349
Week ended July 15, 1950	17,807
Freight cars delivered	
June 1951	9,644
June 1950	3,874
Freight cars on order	
July 1, 1951	147,725
July 1, 1950	40,585
Freight cars held for repairs	
June 1, 1951	94,038
June 1, 1950	133,936
Average freight car turn-around time, days	
May, 1951	14.78
May, 1950	15.34
Average number railroad employees	
Mid-May 1951	1,291,172
Mid-May 1950	1,135,064

In This Issue . . .

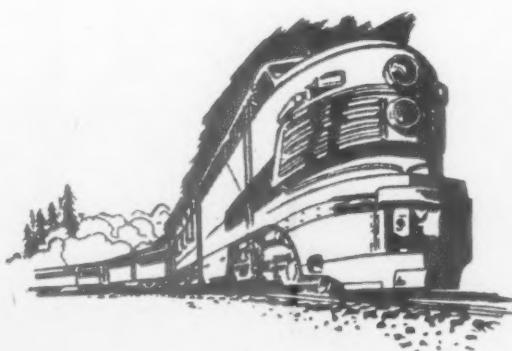
IF YOU OWNED A RAILROAD! One reason, undoubtedly, that railroads find it so difficult to impress the public with their need for greater revenue is simply that most railroads, being big corporations, necessarily report their earnings in big figures. Even earnings amounting to millions may be—and often are—wholly inadequate for legitimate corporate needs. But it's understandably hard to get that fact across to the average man, who may be disposed to measure corporate income against his own. So why not "individualize"—"personalize"—a railroad by "dividing" its trackage, its revenues, its expenses and its earnings among its employees—to bring those big corporate figures down to sums that anyone can comprehend? Cliff Somerville did just that in his B. & M. Magazine not long ago—and did it so well that his article seems worth reprinting in full, for possible application elsewhere. Page 43.

GRAIN ON RAILS: Somebody's always taking the joy out of life! Just as railroads in "hard" wheat states had gotten themselves in the best shape in nearly a decade to handle the annual winter wheat harvest, along came the record breaking Kansas-Missouri floods. The wheat outlook—pre- and post-flood—is discussed on page 38; pictures of what the flood itself is doing to the railroads are on pages 30, 31 and 40.

WILDERNESS RAILROAD: Outdoor working seasons are short in sub-Arctic Labrador—and it's a tremendous job to build 350 miles of new railroad through almost virgin wilderness. But work on the Quebec, North Shore & Labrador—currently the largest railroad construction project in North America—is well under way, on a schedule which calls for its completion by 1954. What the job involves, and how it's being done, are told in words and pictures on pages 34-37.

GETTING A DOLLAR'S WORTH—of results for every dollar spent on maintenance of equipment is the subject of a page 46 article by A. L. Davis, of the General Electric Company. Mr. Davis, emphasizing the value of collecting, measuring and analyzing maintenance facts, gives some of the basic elements in a system of diesel maintenance cost control.

NEWS HIGHLIGHTS: Gross revenue for June up 8.3 per cent above 1950.—Freight car buying picks up again, with orders reported for 1,400.—Fairbanks, Morse to build new plant at Kansas City as its Canadian subsidiary prepares for "Kingston Diesel Day" on August 1.—C.P. to spend \$14 million in eastern Canada.—Westinghouse Air Brake, Union Switch & Signal merger approved.—Mid-Western ship-



WEEK AT A GLANCE

pers hear of better freight car use.—P.R.R., B. & O., Rock Island all at work on major construction projects.

In Washington . . .

QUICK ACTION ASKED: Denial of the Ex Parte 175 freight rate increase would weaken the entire railroad industry by draining away its resources, the I.C.C. was told by E. H. Burgess in his closing rebuttal argument. "Don't take that risk," he urged, in asking for "an immediate report." Page 32.

WASHINGTON HEADLINES: Steel allocations contemplate fourth-quarter production of about 26,000 freight cars and 2,500 tank cars, N.P.A. says.—I.C.C. again approves A.C.L.-F.E.C. merger.—Fifteen more railroads and two refrigerator lines get quick amortization certificates.—Firemen's strike vote not taken to July 18.—New auto rates effective September 4.

DIESEL FUEL SAVINGS: Advantages of diesel-electric locomotives from the standpoint of fuel costs were emphasized again in the latest "Monthly Comment" of the I.C.C.'s Bureau of Transport Economics and Statistics. Other articles in the "Comment," which is reviewed on page 29, cover capitalization and working capital of Class I railroads, and railroad and truck traffic figures.

. . . And Elsewhere



THE TREND toward "higher speeds with long and heavier trains traveling greater distances without intermediate stops . . . puts a greater responsibility upon mechanical officers to know that the design and maintenance of equipment is adequate." So I. C. Commissioner W. J. Patterson, above, told the A.A.R.'s Mechanical Division last month at Chicago, in an address which is abstracted on pages 41 and 42.

FLYING FURNITURE IN PADDED PLANES: Slick Airways, Inc., which makes its living entirely from movement of freight, is reported to be regularly moving loads of a ton or more of upholstered furniture from Chicago to New York for the account of John Stewart, Inc., a retailer. It seems that Slick furnishes to the furniture sources in Chicago pads which are placed on the furniture at the factory. This enables the load to be shipped without crating. It is the lower cost of shipping the furniture uncrated which prompts the retailer to order movement by air—not a saving in time.

NOW, CLAIMS FOR RELEASING HAND BRAKES! A number of lines in the Chicago terminal district are reported to be receiving claims from the Brothers for releasing hand brakes on cuts of cars picked up by transfer crews in the yards of foreign roads. It is not known under what reasoning the claims are being made. But it must be strange indeed, because the release of hand brakes is clearly a part of the job—both in the book of rules and in working contracts.

SEVENTEEN SHIPS: With completion of vessels now on order, the American Great Lakes cargo fleet stands to be increased by 17 dry bulk ships before the close of 1953, according to figures compiled by the Lake Carriers Association. One is expected to be in commission this year, 14 more in 1952, and the remaining two in 1953. Estimated capacity of the 17, at 24-foot draft, totals 306,000 tons. In addition, Canadian operators have on order seven bulk freighters and three oil tankers.



A

ny freight car is a
more profitable car on



THE SMOOTHEST TRAFFIC-BUILDERS BETWEEN LCL AND YOUR RAILS

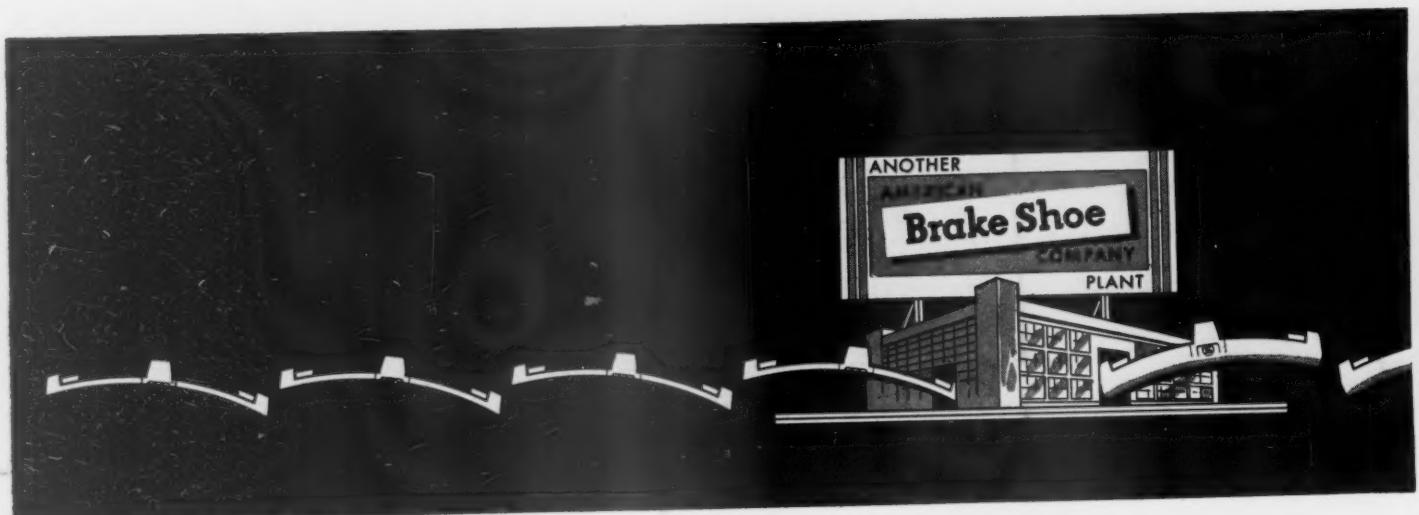


NEW YORK
CHICAGO
BALTIMORE
RICHMOND, VA.

SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

SCRAPS



SCARCE

Today's shortage of iron and steel scrap is serious . . . calls for mutual cooperation if our production quotas and your supply needs are to be successfully met.

TURN IN YOUR WORN-OUT BRAKE SHOES HELP US MAINTAIN PRESENT PRODUCTION



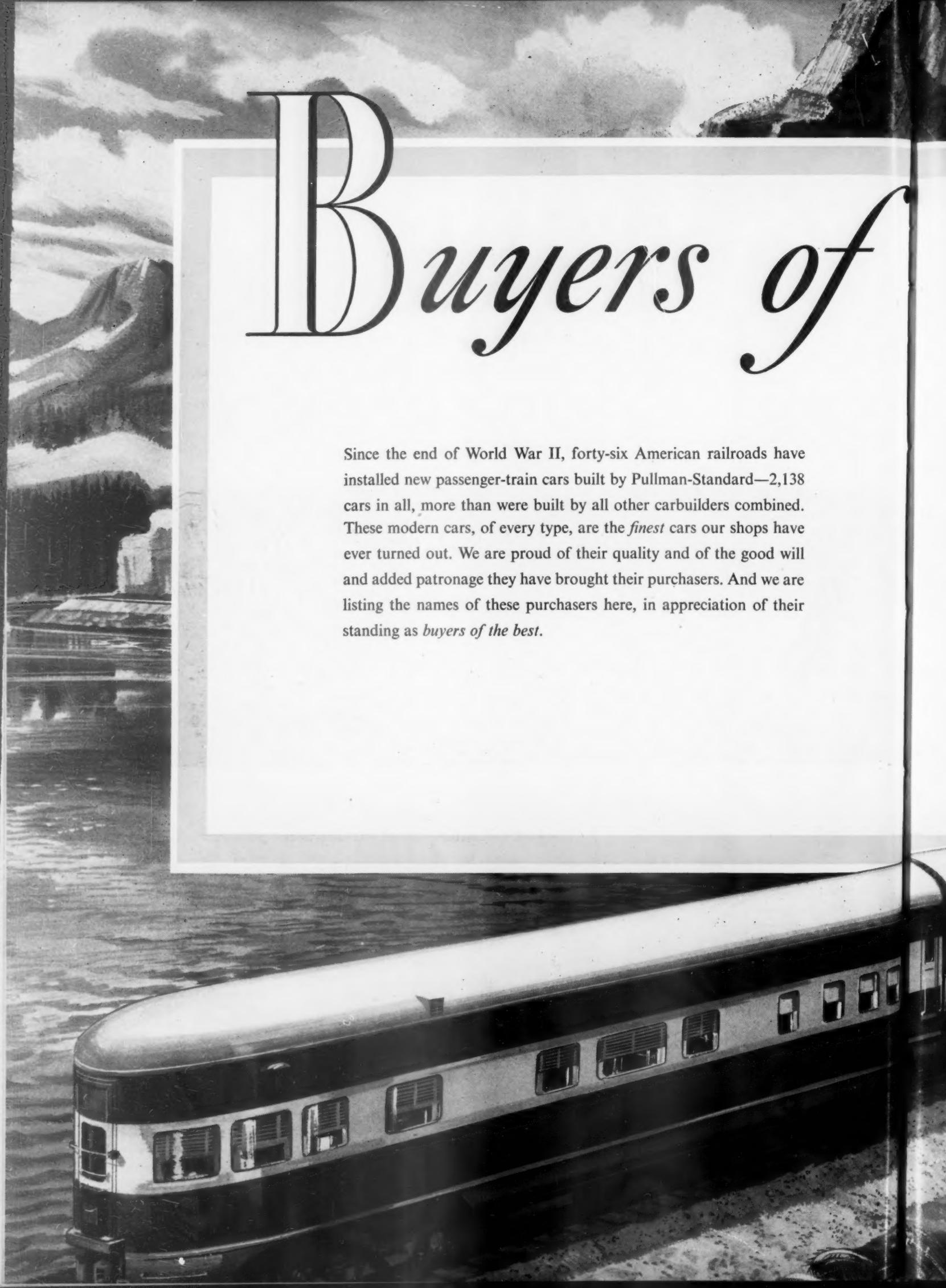
Only by full utilization of existing brake shoe scrap can we hope to make this possible. That's why we urge you to turn in your discarded brake shoes *now*—and continue to turn them in. American Brake Shoe Company, 230 Park Avenue, New York 17, N. Y.

**AMERICAN
Brake Shoe
COMPANY**

BRAKE SHOE AND CASTINGS DIVISION

Buyers of

Since the end of World War II, forty-six American railroads have installed new passenger-train cars built by Pullman-Standard—2,138 cars in all, more than were built by all other carbuilders combined. These modern cars, of every type, are the *finest* cars our shops have ever turned out. We are proud of their quality and of the good will and added patronage they have brought their purchasers. And we are listing the names of these purchasers here, in appreciation of their standing as *buyers of the best*.



the best

Buyers of Pullman-Standard Passenger-Train Cars

January 1, 1946, to April 1, 1951

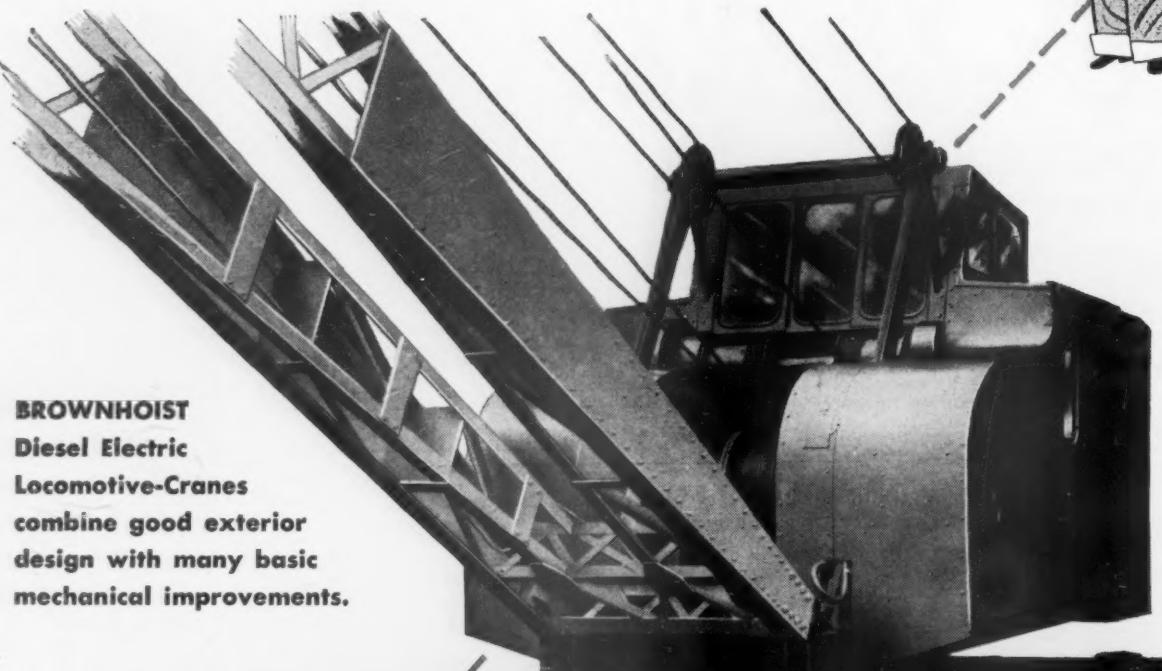
Atchison, Topeka & Santa Fe
Atlanta & West Point
Atlantic Coast Line
Baltimore & Ohio
Bangor & Aroostook
Boston & Maine
Chesapeake & Ohio
Chicago & Eastern Illinois
Chicago and North Western
Chicago, Burlington & Quincy
Chicago Great Western
Chicago, Milwaukee, St. Paul & Pacific
Chicago, Minneapolis, St. Paul & Omaha
Chicago, Rock Island & Pacific
Cincinnati, New Orleans & Texas Pacific
Delaware, Lackawanna & Western
Denver & Rio Grande Western
Erie
Florida East Coast
Great Northern
Illinois Central
International-Great Northern
Kansas City Southern
Louisiana & Arkansas

Louisville & Nashville
Maine Central
Missouri-Kansas-Texas
Missouri Pacific
New Orleans & Northeastern
New York Central
New York, Chicago & St. Louis
New York, New Haven & Hartford
Norfolk & Western
Northern Pacific
Pennsylvania
Pere Marquette
Richmond, Fredericksburg & Potomac
St. Louis-San Francisco
Seaboard
Southern
Southern Pacific
Spokane, Portland & Seattle
Texas & New Orleans
Texas & Pacific
Union Pacific
Western Railway of Alabama

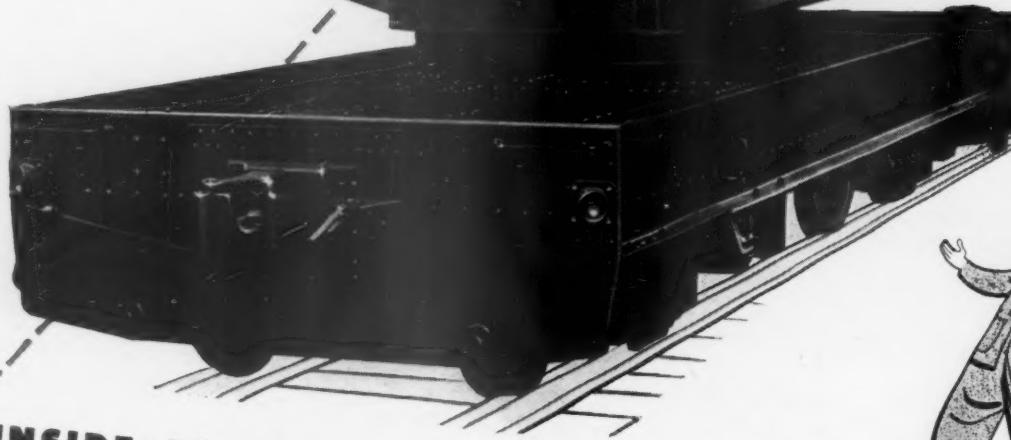
Pullman - Standard
CAR MANUFACTURING COMPANY

CHICAGO • NEW YORK • CLEVELAND • WASHINGTON, D.C. • PITTSBURGH
BIRMINGHAM • SAN FRANCISCO

OUTSIDE: It's a beauty Extra-heavy Streamlined MONITOR-TYPE CAB! 360° visibility! All controls conveniently located; all machinery fully protected from the weather, yet accessible. New CLEAR VISION BOOM. 14 inch safety clearance between car body and upper works.



BROWNHOIST
Diesel Electric
Locomotive-Cranes
combine good exterior
design with many basic
mechanical improvements.



INSIDE: It's really engineered New DYNAMATIC CLUTCH gives smooth, sensitive 32-step control, banishes slippage, eliminates torsional impulse and vibration. Safe FRICTION CLUTCH BOOM HOIST driven by worm and wheel in oil bath. Twin-barreled, extra-large boom-hoist drums take all line in one layer. New Wide-faced Hoist DRUMS mounted on roller bearings with air cylinder mounted within the drum. ELECTRIC ROTATION and electric travel reduce maintenance to a minimum. Optional features include 8-WHEEL CHAIN DRIVE for increased drawbar pull and TWIN ENGINE DRIVE where greater tractive effort is required.

BROWNHOIST

INDUSTRIAL BROWNHOIST CORPORATION, BAY CITY, MICHIGAN

DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Canadian Brownhoist, Ltd., Montreal, Quebec. AGENCIES: Detroit, Birmingham, Houston, Los Angeles

500 tons a day

THAT'S pig iron going into the gondola. It comes from the blast furnace of Eastern Gas and Fuel Associates, Everett, Massachusetts.

Before they bought their American DiesELectric, Eastern used a steam crane for this work. It was light for the job and required constant repairs resulting in a large loss of productive time. During operation, production was lost while the crane made frequent stops for refueling. When the steam crane was not required on the job, additional manpower was needed to clean and keep the fire going to maintain steam in the boiler.

The DiesELectric, with diesel power to the deck, electric power to the wheels, does much more work with fewer man hours. It loads 500 tons of pigs a day; switches full cars out, empties in. Starts work at the push of a button . . . and keeps going without interruption. Fuel cost for a day is about the price of a good lunch.

Maybe you should have an American DiesELectric. Why not mail the coupon, for additional facts.



Modernize...economize...with
American Hoist
& Derrick Company
ST. PAUL 1, MINNESOTA

Mail this coupon

69 1602
American Hoist & Derrick Co.
St. Paul 1, Minnesota

• Please send literature on

**AMERICAN DIESLECTRIC
LOCOMOTIVE CRANES**

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COMPANY _____

ADDRESS _____

CITY _____ STATE _____

Unicel

THE NEW CELLULAR LAMINATED FREIGHT CAR
THAT'S BIGGER, STRONGER, MORE DURABLE
AND 45% LIGHTER THAN CONVENTIONAL CARS!

Gaining strength through its shape; lightness through its revolutionary new construction techniques—UNICEL has a "shock-dispersing" laminated bolster in place of the conventional steel body bolster. Shock and pull jars which damage lading are cushioned and absorbed by the Unisorb floating draft gear! Road tests prove *there is 66% less road shock with UNICEL than ordinary cars!*

These are Not Theories!

HERE ARE THE FACTS!

Unicel costs less to maintain, resists corrosive action, requires fewer repairs, is easier to keep clean and free from contamination!

Unicel is more economical to operate, is lighter by 15,000 pounds, can carry a 65 ton payload!

And

Unicel costs less to buy, uses less critical steel, less skilled labor, can be mass produced! 1200 Unicel cars cost no more than 1000 ordinary cars!

AS A REFRIGERATOR CAR

An inner wall, insulation plus new refrigerating unit quickly convert UNICEL to UNITEMP...a cellular laminated refrigerator car with 75% more capacity than a 40 foot car of comparable weight!

TESTS were conducted in a special "Death Valley Laboratory" to study moisture vapor passage and condensation. The car was placed in an oven powered with 100,000 watts, capable of producing heat in excess of 165 degrees! The results? UNITEMP PROVED beyond doubt that it can maintain a more uniform temperature; keep condensation and dehydration to a minimum—is far superior in every way to the conventional car now in use by American railroads! Heat can also be provided during winter months!

Get the whole story. Write for your copy of
"UNICEL—The Freight Car of the Future—Today"



PSC

PRESSED STEEL CAR CO., INC.

6 No. Michigan Ave., Chicago, Ill.
230 Park Avenue, New York



80B00
TS8100
81B00
TS8600
TS94B00
4100 INT

New Balanced-Alloy Steels

The new series of balanced-alloy steels recently approved by the American Iron and Steel Institute are now being made by Bethlehem.

They are designed primarily to save nickel and molybdenum that are urgently needed for certain defense applications.

The new balanced-alloy steels are being used to replace some of the older and better known alloy grades such as: 2300 Nickel, 3100 Nickel-Chromium, 4100 Chromium-Molybdenum, 4600 Nickel-Molybdenum, 8600 and 8700 Nickel-Chromium-Molybdenum steels.

If you have any problems concerning the use of the new balanced-alloy steels, or if you need information on the selection, treatment and machining of steels for defense work, our metallurgists will be glad to help. Phone or write for this service.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM **ALLOY** **STEELS**



over **50** years' experience!

1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930

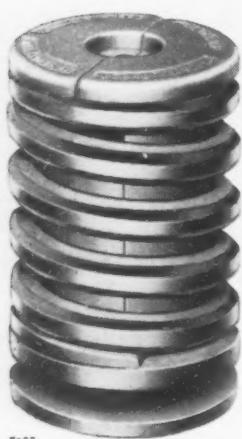
The many important improvements in Westinghouse Friction Draft Gears have been made as a result of the Research, Laboratory and Service Tests which have been carried on for more than 50 years!

The result—longer life and lower maintenance cost for cars—and for Draft Gears too.



WESTINGHOUSE Friction Draft Gear

Certified A. A. R.



CARDWELL Friction Bolster Spring

for A. A. R. and long travel springs

1951

Over 98% of the Cars in Freight Carrying Service are A. A. R. Construction, and Over 96% have Friction Draft Gears.

**Cardwell Westinghouse Co., Chicago
Canadian Cardwell Co., Ltd., Montreal**



Automatic End Door Operators
for New and Remodeled Coaches

Not so long ago, the idea of swinging wide a heavy door by the mere pressure of a finger tip seemed as far-fetched as Ali Baba's use of a magic phrase.

Today, it's a reality. On railroad passenger coaches new and remodeled, from coast to coast, NP Automatic End Door Operators open doors instantly at the touch of a finger. And they close gently, safely, quietly.

NP Automatic End Door Operators, for either swinging or sliding doors, are standard equipment on almost all new cars. Their use represents a sound investment in passenger safety, comfort, convenience—and good will.

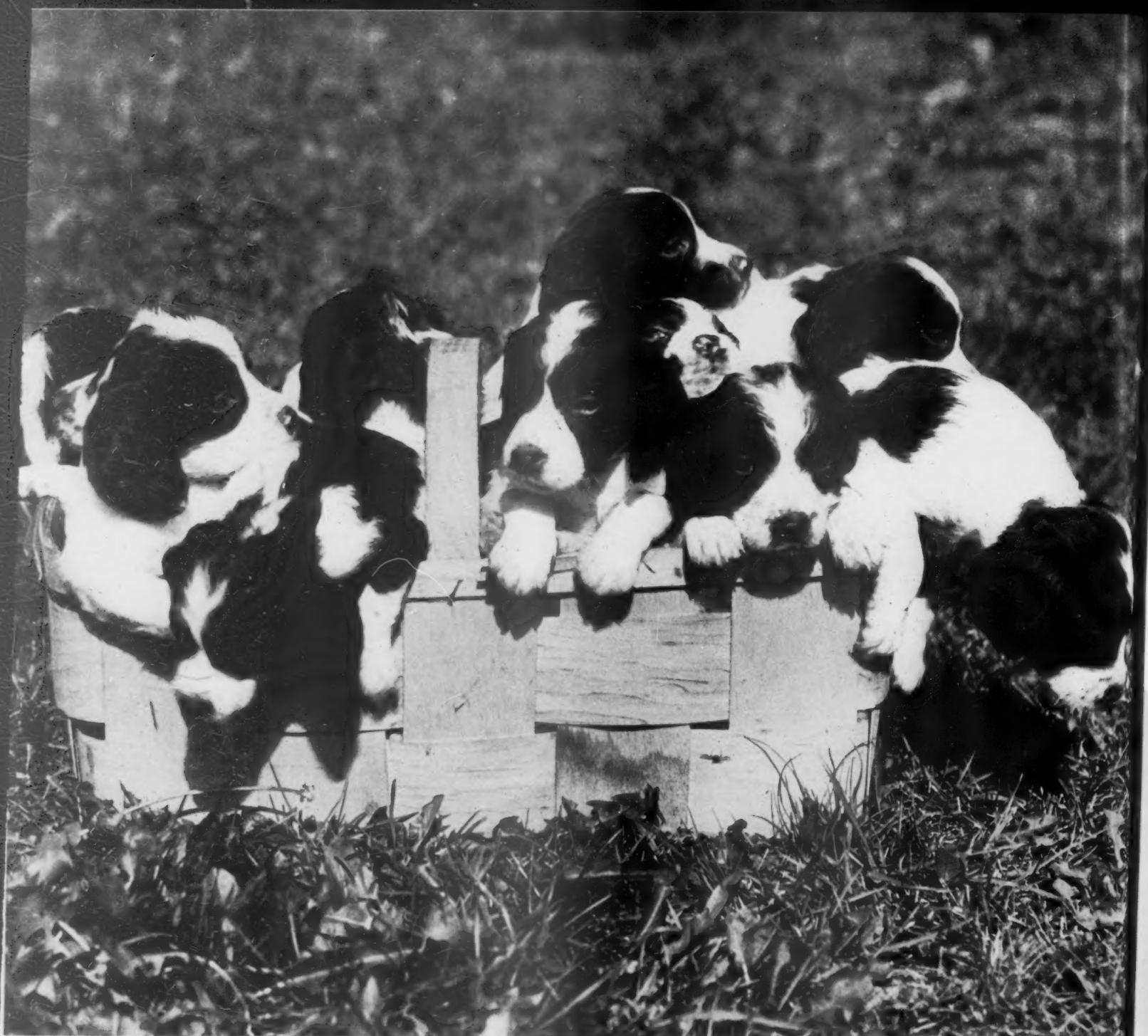
For full details write for Bulletin #1063.



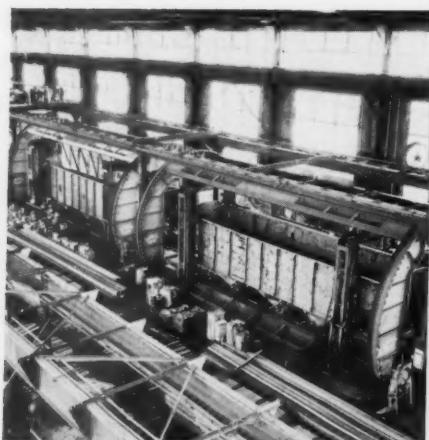
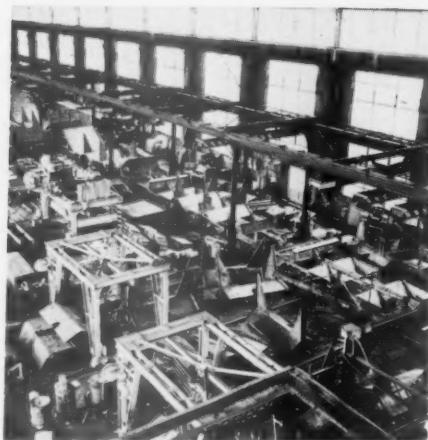
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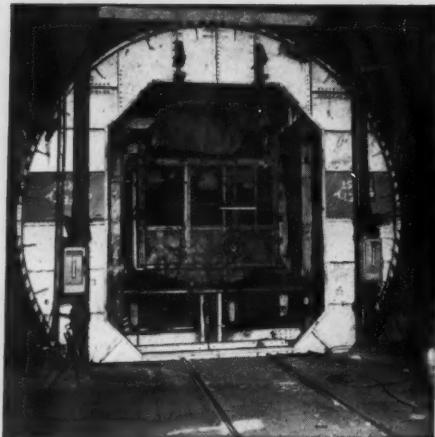


Q.C.F. originated assembly-line construction of freight cars. This view shows the construction and erection departments. Note how the sub-assemblies at left feed into the main assembly line.



Q.C.F. designed rotator jigs are an important part of the main assembly line. Here hopper cars are quickly positioned for ideal finish welding conditions. Cars are even turned upside-down, as shown to the right, for finish welding on floor system and underneath parts.

**CHEAPER
BY THE
DOZEN...**

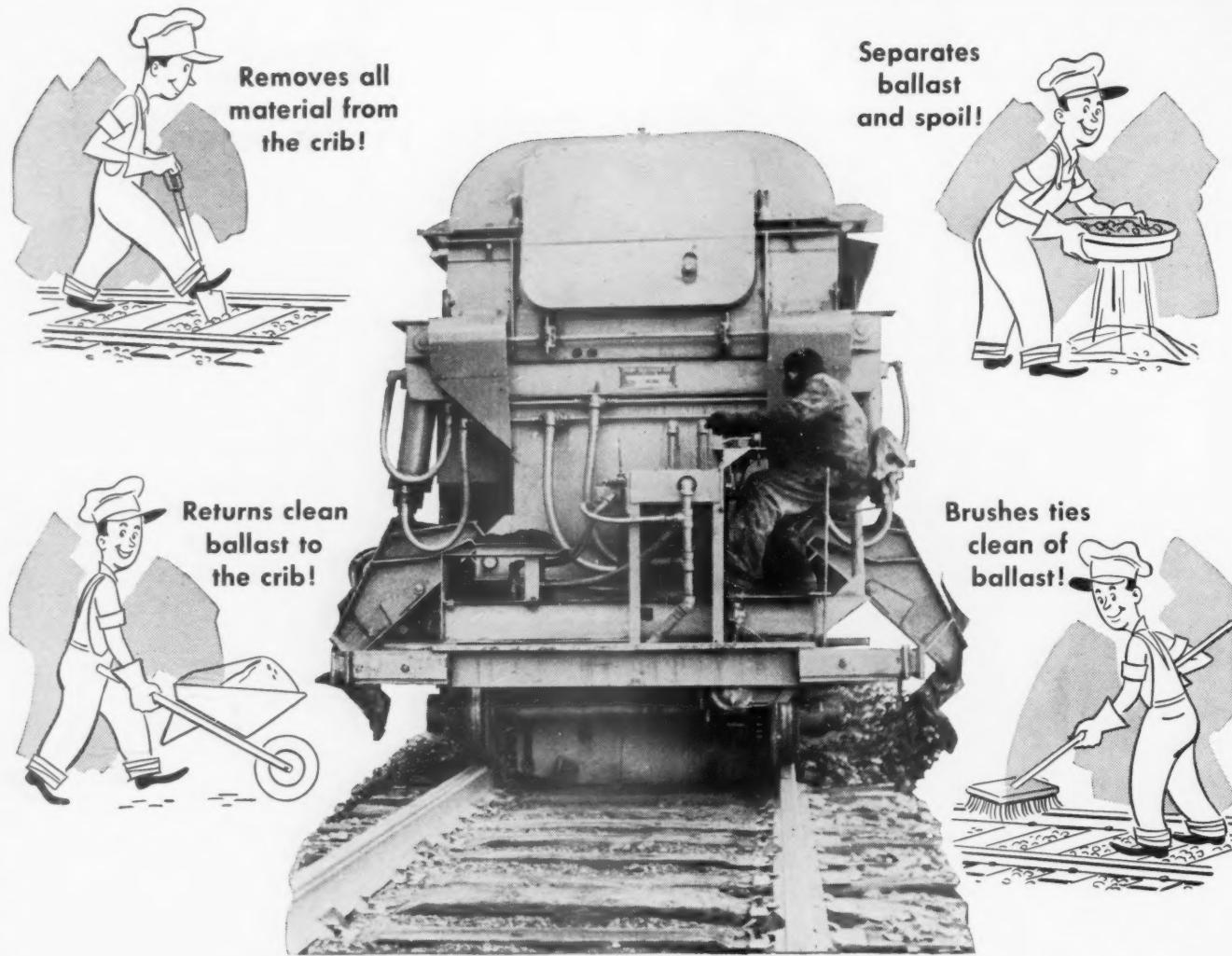


Nature, too, saves time in her wondrous reproductions by delivering 'in quantity'. And while pups by the basketful may tickle the imagination, they serve here only as an introduction to a message of importance to Railroad men.

A.C.F. is a builder...in quantity...of railroad cars. Through effective standardization of design, **A.C.F.** can deliver literally thousands of freight cars. With facilities set up to produce in quantity, **A.C.F.** assembly-line production builds better cars, of interchangeable accuracy. Maintenance advantages to the Railroad of such standardization is obvious.

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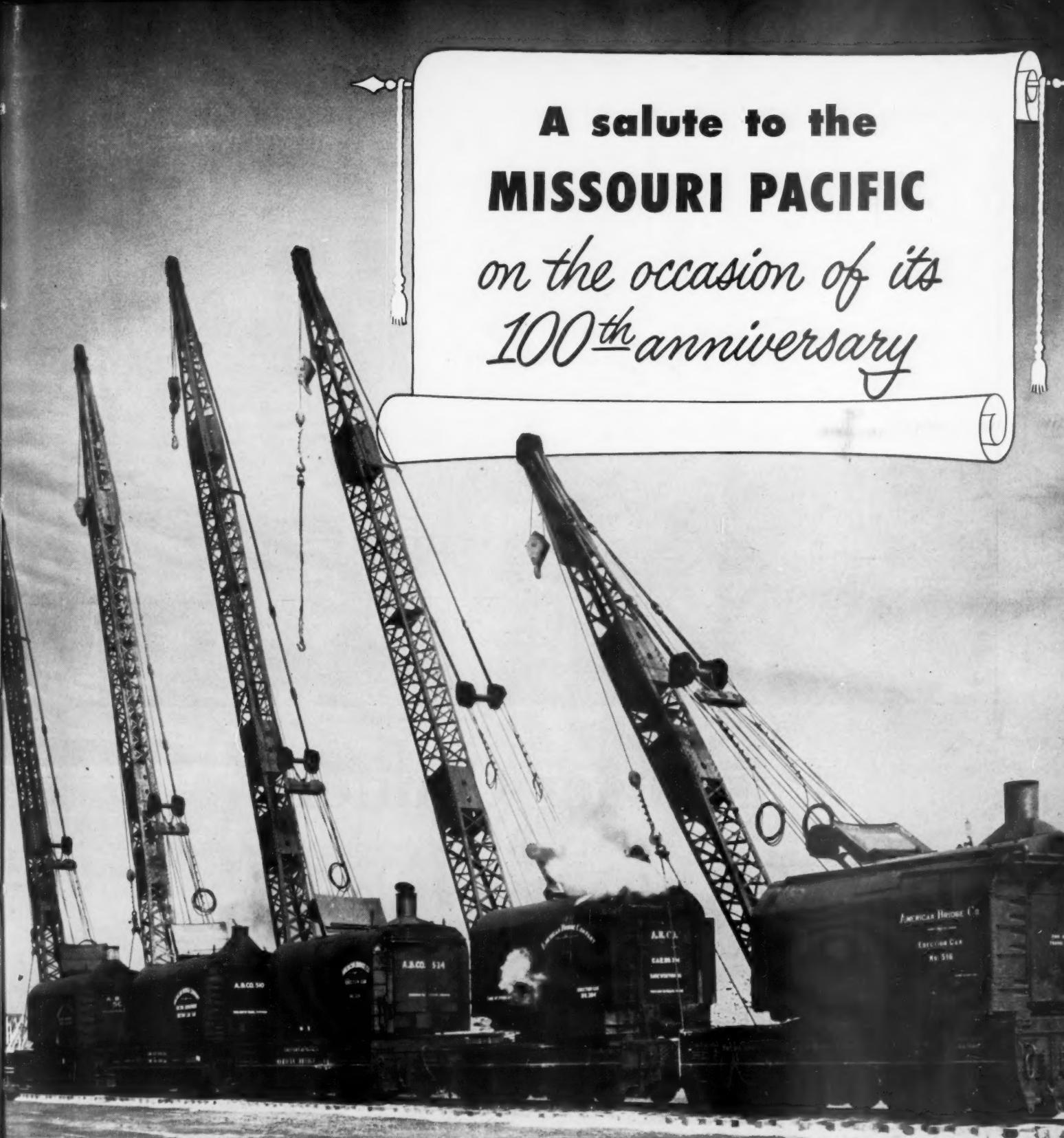
With screens removed, all material in the crib can be excavated and conveyed to a desired distance from the track.

The machine is operated by one man, and cleans and excavates from one to three cribs per minute depending on the tie spacing. It is self-propelled at speeds up to 20 miles per hour.

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AMERICAN BRIDGE COMPANY heartily congratulates this important railroad on reaching the century mark!

Though only half as old ourselves, we know the satisfaction the Missouri Pacific must feel from having contributed so immeasurably to the tremendous development of the area it has served so well through the years.

It has been a privilege for American Bridge Company to have participated in the Missouri Pacific's expansion and modernization by fabricating and erecting many of the

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The capacity of the electrical system, including the storage battery, has increased correspondingly; so that the use of EDISON Nickel-Iron-Alkaline Storage Batteries — the original light-weight batteries — saves more weight than ever. Often the saving amounts to as much as a ton per car — sometimes even more.

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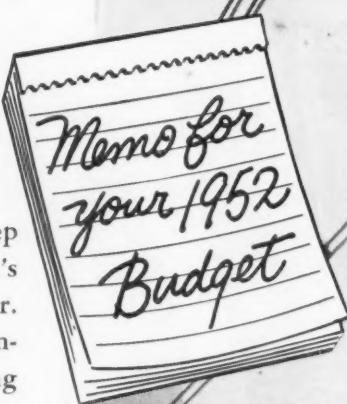
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The Okoprene End Seal is another Okonite contribution to electrical circuit security and long life. For further details on the Okoprene End Seal, write for Bulletin RA-2091. The Okonite Company, Passaic, New Jersey.

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OKONITE SINCE 1878 **insulated wires and cables**

MANAGERIAL HANDICAPS OF 1903 AND 1951 COMPARED

A great many railroad men doubtless noted with satisfaction the report in the June 16 "Business Week" of the success a railroad alumnus—Laurence Whittemore, formerly president of the New Haven—has attained at the head of an "outside" manufacturing concern. Strange, isn't it, the habit railway leaders have of doing so well when they are diverted into such positions in other industry—while, all the time, the accusation keeps on being made that the railroads suffer from inadequate management?

The plain fact, of course, is that a railroad is just about the hardest business there is to manage successfully—because no other industry is so hamstrung by government regulation and the complexity of restrictive union rules, nor so deeply beset by socialized competition. Under such circumstances, a man who can achieve modest success in running a railroad has only to transfer his manipulative skill to a less restricted situation to chalk up a record of outstanding accomplishment.

But present-day railroad managers get compared, to their disadvantage, not only with managers of "outside" industry but also with railroad leaders of a generation or two ago. Some evidence bearing on the relative simplicity of the railroad manager's task a half-century ago—compared to the same job today—has been shown to this paper by the operating vice-president of a large railroad. This evidence takes the form of the "schedule" of pay rates and working rules in train service on this road in 1903, compared to the "schedule" for the same service today.

The train-service schedule of 1903 consisted of a booklet containing nine pages of printed matter—approximately 2,500 words. The schedule in effect today consists of 47 printed pages—about 14,500 words, or almost six times the magnitude of the 1903 schedule.

But this isn't nearly all. In addition to the 47 pages

of the existing schedule that restrict the management's freedom of action, and which have to be watched meticulously to avoid ruinous "back pay" claims, there is another booklet of 88 printed pages containing "interpretations" of the existing schedule, which management has accepted upon insistence of the union organizations.

On top of all this—and also to be carefully studied and carried out by management—is the 90-page type-written text of the May 25, 1951, agreements regarding wages and working conditions with the Brotherhood of Railroad Trainmen—a document of probably some 35,000 words. This takes care of only one of the operating unions. Multiply all this complexity by that of agreements with three or four more operating unions. Then add to the pile the schedules of a dozen "non-ops," most of which did not exist or were not recognized in 1903. Finally, consider the interminable complexity and irrationality of countless predatory "make-work" decisions of Adjustment Board referees, which management must keep in mind in planning all operations, lest it bankrupt the property. All these complexities were easily dispatched or completely avoided back in 1903 by this simple rule:

"A trainman or flagman who is dissatisfied with the decision of any officer of the company shall have the right to appeal to his superintendent, or after having appealed to the superintendent, to a higher official."

All the exasperating intricacies of present-day union relations are, of course, paralleled or exceeded by the similar increase in regulatory statutes and administrative orders, with their enormous mass of important interpretative decisions—all of them inhibiting the freedom of management to function according to the rules of commonsense.

It is not for the purpose of wringing the crying-towel or offering alibis for present-day management that the

foregoing facts are set forth here. On the contrary, the purpose is to raise this question: Can management really be expected to perform efficiently with the ever-mounting complexity of union and regulatory restrictions? If the answer is in the negative, then should not a well-planned program to reduce this complexity be a high-priority item on the agenda for joint managerial action?

We recall a warning in this area uttered publicly at a railroad meeting by Laurence Whittemore, before he escaped from railroading, to the effect that "the prisoner is in danger of getting to love his chains." A definite and workable commitment to the contrary should avert that danger. If such a program should achieve no greater practical result than decelerating the rate at which new restrictions are continually being contrived and applied, it would still be worth the effort. The time is fast approaching, and it may be here now, when a purely defensive attitude toward the manifold inhibitions which afflict the railroads and railroad management is no longer going to be sufficient to prevent the strangulation of private ownership and operation.

FASTER AND BETTER READING BY RAILROADERS

Because the increasing competition for a man's time demands that his reading rate be speeded up—if he is to obtain the information he needs for his job—the Illinois Central assigned 17 of its executives to participate in a 32-hour training program designed to increase reading efficiency and skills. This "pilot group" has completed the course and their experience has been evaluated. It will be used to determine whether this training technique may be applied to the staff of the railroad as a whole.

The program consisted of two-hour sessions, held twice weekly—the minimum time recommended because it is necessary to establish new habits of reading during the training period.

The men were given a series of tests on reading rate and comprehension immediately before and after the training. Between the two tests, reading rates doubled and comprehension increased substantially. The highest individual gain in speed of reading was from 313 to 1,200 words a minute. The second highest was from 240 to 1,000 words per minute. The lowest gain was from 309 to 520 words per minute. In short, even the member of the group showing the lowest gain from the training practically doubled his reading rate.

Since the purpose of publishing a business paper is to have it read, the editors of *Railway Age* applaud the Illinois Central in its farsighted determination to grapple with one of the most important problems in the "care and training of business executives" today—i.e. to better enable busy men to get what they need from the ever-increasing mass of printed matter which passes over their desks.

WHAT IS IT WORTH TO ELIMINATE HOT BOXES?

Judging both from the frequency and the quantity of discussion devoted to hot boxes at every type of meeting of mechanical men—from local car foremen's associations to the Mechanical Division of the Association of American Railroads—this problem is easily number one on the list of those to be solved by railroad mechanical departments today.

It is doubtful whether there is any other problem in the physical realm, the solution of which would bring more pleasure to more departments and greater overall benefit to the railroads.

There are two readily apparent general approaches to alleviation of the hot-box situation: (1) to reduce their frequency by improving the design of the entire journal-box and bearing assembly, or (2) to provide a positive method of detecting hot boxes, when they occur, before derailment or other serious damage results. Either of these alternatives requires money and, before deciding which approach to choose, it is desirable to know what expenditure will be required to see it through.

It is interesting to speculate on how much money *should* be available to surmount this problem, and there is one way to calculate this. Simply estimate how much it would be worth to each road just to know how to eliminate, or at least virtually eliminate, (1) hot boxes themselves, through better design, lubrication, packing, etc., or, as an alternative, (2) to avert the wrecks and other damage caused when hot boxes go too far undetected.

Undoubtedly it would be worth far more to know how to accomplish the first alternative because it would do everything the second would do, plus eliminating road delays when cars with hot boxes must be set out. Therefore, the total of what it is worth to individual roads to accomplish the second, though lesser, objective could reasonably be taken as the minimum to be spent on the hot-box problem collectively by the principal parties concerned—the A.A.R., the supply companies, and by railroads individually.

While it would, of course, be impossible as a practical matter to get any agreement on what it is worth on any road to eliminate hot boxes, or the worst of their results, and difficult to learn the total being spent by all concerned to solve the problem, it seems a good bet that the amount that should be spent is many times what is being spent.

If the problem is as important as is evidenced by all the talking done about it, the two sums should be brought closer together by spending the amount of money that the solution of the problem justifies. This might at first appear to be a staggering sum; but, assuming for example it were \$500,000, dividing it up among the 130-odd major roads alone would cut it down to only \$4,000 each, an amount that should be worth spending for even a small improvement.



Diesel-Electric's Fuel-Cost Advantage Emphasized Again by 1951 Figures

Four-months data show diesels handled nearly half of road freight service, nearly two-thirds of yard service, and about 60 per cent of passenger service; "Monthly Comment" also has articles on changes in capitalization and working-capital position of Class I roads

Advantages of diesel-electric locomotives from the standpoint of fuel costs were emphasized again in figures presented by the Interstate Commerce Commission's Bureau of Transport Economics and Statistics in the latest issue of its "Monthly Comment." The figures, covering this year's first four months, show that diesel-electrics then handled nearly half of the road freight service, nearly two-thirds of the yard service, and about 60 per cent of the passenger service, while accounting, respectively, for only 30.8 per cent, 33.4 per cent, and 46.3 per cent of total fuel costs involved.

Other articles in the issue included a discussion of changes since 1943 in the capitalization of Class I roads, and a report on the working-capital position of those roads as of April 30. Also, there were analyses of railway revenue traffic statistics for this year's first four months, and of 1950 traffic and revenues of Class I intercity truckers.

The analysis of railway fuel costs included two tables, which are reproduced here from the "Comment." In addition to the diesel figures noted above, the data show comparative figures as to services performed and

fuel costs incurred by other types of locomotives.

Also, there are the unit-cost figures which show that the fuel cost of performing 1,000 gross ton-miles of road freight service by diesel was 16.6 cents, compared with 33.4 cents and 40.1 cents for coal and oil-burning steam locomotives, respectively. The passenger-service figures are similarly favorable to the diesel, while the

yard-service figures are even more favorable.

Capitalization Changes

The article on changes in railroad capitalization included figures showing that long-term debt of Class I line-haul roads amounted to \$9,281 million at the close of 1950. This was 1.4 per cent above the 1949 year-end total of \$9,154 million, but 11.3 per cent below the comparable 1943 figure of \$10,463 million.

Most of the debt increase in 1950 over 1949 was attributable to an increase of \$155.4 million, or 9.2 per cent, in equipment obligations, the bureau pointed out. It went on to note that, between the close of 1943 and the end of 1950, there was an increase of \$1,074.4 million, or 138.9 per cent,

Service performed by yard and train service locomotives and cost of fuel consumed—Class I roads (including switching and terminal companies)

Kind of locomotive	First 4 months of 1951—Basic figures in thousands			Road passenger service			
	Yard switching loco- motive hours	Yard service		Gross ton-miles, including locomotive and tender	Percent of total	Passenger train car-miles ¹	Percent of total
		Percent of total	total				
Coal burning—steam	5,537	28.8	209,338,456	39.4	235,591	21.6	
Oil burning—steam	1,041	5.4	56,331,154	10.6	134,358	12.3	
Diesel-electric	12,404	64.6	255,640,371	48.1	651,301	59.8	
Electric	231	1.2	9,873,332	1.9	68,962	6.3	
Total	19,213	100.0	531,183,313	100.0	1,090,212	100.0	
			Fuel cost				
Coal burning—steam	\$13,571	53.0	\$69,919	50.7	\$13,429	31.8	
Oil burning—steam	3,223	12.6	22,589	16.4	6,718	15.9	
Diesel-electric	8,546	33.4	42,436	30.8	19,539	46.3	
Electric	259	1.0	2,873	2.1	2,552	6.0	
Total	25,599	100.0	137,817	100.0	42,238	100.0	

¹ Locomotive propelled trains.



1 (Wide World)



2 (Wide World)

FLOOD HAVOC IN KANSAS

How the railroads have suffered in flood-ravaged eastern Kansas is evident in these photos taken on July 12, 13 and 14.

Flood crests have since moved down the Kansas, the Osage, and the Neosho rivers to the Missouri and the Mississippi. At St. Louis, the Mississippi is reported to have risen to 37.5 feet and was expected to hit 39 feet about July 22. This is only slightly below the highest level on record. President Truman has designated the flooded sections of both Kansas and Missouri as disaster areas, as Congressional leaders con-

sidered a \$15 million emergency relief appropriation. Major General Lewis A. Pick, chief of Army Engineers, has estimated the damage to be higher than in any other domestic flood—\$500 million.

1—Santa Fe roundhouse at Kansas City. A broken levee flooded this area in 30 minutes.

2—Rock Island's Armourdale yard, Kansas City, Kan. In some places the water rose almost to the roofs of the box cars.

3—Loaded gondola cars ballast the Rock Island's Kansas River bridge near

Armourdale. The swift movement of the water caused a foaming "rapids" over the bridge deck.

4—The Burlington's so-called Hannibal bridge, a double-decked structure leading to the Kansas City municipal airport, was struck by three empty river barges and the movable span jammed open. Debris piled up along the barges, causing still greater pressure against the span.

5—Raging waters of the Kaw river claw at the bridge in the background and endanger signaling equipment and Army hospital car in the foreground.

in equipment obligations. As of the close of last year, equipment obligations, totaling \$1,848 million, accounted for 19.9 per cent of the total long-term debt, compared with 7.4 per cent in 1943.

Railroad reorganizations during the 1944-1950 period had "an important effect on the reduction in debt," the bureau explained. It added that debt

in default dropped from \$757.8 million in 1943 to \$176.3 million in 1950, or 76.7 per cent; and that the 1950 figure was 13.8 per cent below that of 1949.

Annual interest accruals on all classes of long-term debt declined from \$443.4 million in 1943 to \$325.8 million in 1950, a drop of 26.5 per cent. The amount of capital stock out-

standing changed but slightly—\$7,893 million in 1950, compared with \$7,918 million in 1943.

Working Capital

As for the working-capital position of Class I line-haul roads, the bureau's figures showed that "quick assets" (cash and temporary cash investments) increased 6.1 per cent between April 30, 1950, and April 30, 1951—from \$1,648 million to \$1,749 million. This net rise, however, was the composite result of decreases of \$29 million in the Eastern district and \$1.9 million in the Southern region, and increases of \$36.9 million and \$94.8 million in the Pocahontas region and the Western district, respectively.

"Quick assets" as of last April 30 were equal to 76.7 per cent of total liabilities. The corresponding percentage a year earlier was 93.

Net working capital (total current assets less total current liabilities) increased from \$1,375.4 million on April 30, 1950, to \$1,424.3 million on last April 30, a rise of 3.6 per cent. Declines in the Eastern district and Southern region were more than offset by increases in the other two territories.

Fuel consumed and cost per unit of traffic— Class I roads (including switching and terminal companies)

First 4 months of 1951

Fuel and power consumed:		Quantities consumed	Cost per unit of traffic ²
Per yard switching locomotive hour:			
Pounds of coal (steam locomotives)	932	\$2.451	
Gallons of fuel oil (steam locomotives)	70.67	3.096	
Gallons of diesel fuel (diesel locomotives)	7.05	.689	
Kilowatt-hours (electric locomotives)	112	1.123	
Per 1000 gross ton-miles—road freight service: ¹			
Pounds of coal (steam locomotives)	127	.334	
Gallons of fuel oil (steam locomotives)	9.15	.401	
Gallons of diesel fuel (diesel locomotives)	1.7	.166	
Kilowatt-hours (electric locomotives)	29.06	.291	
Per passenger-train car-mile—road passenger service—locomotive propelled trains:			
Pounds of coal (steam locomotives)	21.7	.057	
Gallons of fuel oil (steam locomotives)	1.15	.050	
Gallons of diesel fuel (diesel locomotives)	0.31	.030	
Kilowatt-hours (electric locomotives)	3.7	.037	

¹ Represent gross ton-miles including locomotives and tenders.

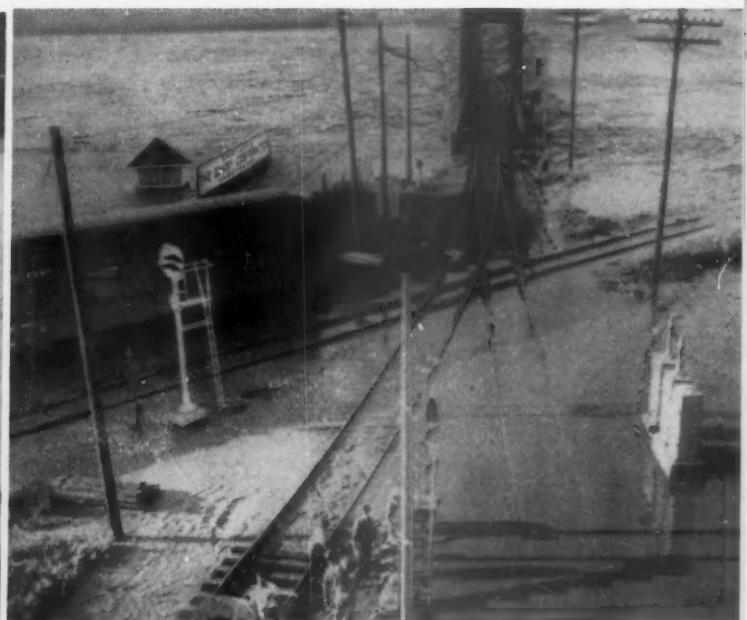
² Includes cost of fuel, including freight and handling charges.



3 (Wide World)



4 (Acme Telephoto)



5 (Wide World)

Excluding materials and supplies, however, net working capital for the roads as a whole dropped 11.3 per cent between April 30, 1950, and April 30, 1951—from \$658.7 million to \$584.2 million. The materials and supplies account was up from \$716.7 million to \$840.2 million.

The bureau's analysis of revenue traffic statistics for this year's first four months pointed up the fact that revenue ton-miles were up 24.7 per cent as compared with the first third of 1950, while revenue passenger-miles were up 11.6 per cent. Railroads of the Pocahontas region were the big relative gainers, their ton-miles having increased 37.5 per cent and their passenger-miles 29.1 per cent.

The percentage increases in ton-

miles and passenger-miles, respectively, in other territories were: Eastern district, 22.1 per cent and 3.9 per cent; Southern region, 18.8 per cent and 12.9 per cent; Western district, 26.5 per cent and 21.5 per cent.

Revenue Comparisons

Meanwhile, freight revenue was up 23.1 per cent and passenger revenue 12.8 per cent, as compared with the first four months of 1950. The percentage increases in passenger revenue by territories were relatively close to the percentage rises in passenger-miles, except in the Eastern district, where the 3.9 per cent rise in passenger-miles produced a revenue increase of 6.3 per cent.

The 1950 showing of Class I inter-

city truckers was indicated by a bureau compilation summarizing figures from quarterly returns of the 1,573 motor carriers involved. The compilation showed that 1950 gross revenues of the truckers totaled \$2,373 million, an increase of 28.5 per cent above the comparable 1949 figure of \$1,847 million. Their net income was up 50.7 per cent—from \$63.9 million to \$96.3 million.

These truckers transported 218,057,890 tons of revenue freight in 1950. This reflected an increase of 27.9 per cent above the 1949 tonnage. That rise, the bureau suggested, "may be compared with an increase of 11.6 per cent in the number of tons of revenue freight carried by Class I steam railroads between the same years."

Railroads Ask Quick Rate-Increase Action

I.C.C. told denial would result in weakened industry

A final plea that the nation's railroads be given the rate increase they are seeking was made to the Interstate Commerce Commission July 10, at the close of oral argument in the Ex Parte 175 rate case. Winding up the argument with a rebuttal statement for the railroads, E. H. Burgess, vice-president and general counsel of the Baltimore & Ohio, told the commission that denial of the increase would cause railroad resources to be drained away and the whole industry would be weakened.

"Don't take that risk," Mr. Burgess urged. He asked the commission for "early findings and an immediate report," and again cited increased operating expenses and low earnings as "cardinal facts" for the commission to keep in mind.

The carriers have submitted that wage and price increases have upped expenses by more than \$1 billion since July 1, 1949. Most of this, \$941 million, falls for the first time in 1951. The roads have estimated their net railway operating income for 1951 at \$757 million, including the interim increase which became effective April 4. On this basis, their rate of return for the year would be 2.97 per cent. (*Railway Age*, July 16, page 31.)

In summing up the railroad argu-

ment, Mr. Burgess told the commission that the matter of increased carrier expenses "is undisputed in this record." He said the "basic contention" of those opposing the rate increase is that higher expenses "can be absorbed." This, he said, "is a great compliment to the industry," but it is something no other industry has done and no other industry has been asked to do.

Before the commission is a railroad petition for a 15 per cent increase in freight rates. (*Railway Age*, April 2, page 63.) An interim increase, averaging about 2.4 per cent overall, was authorized by the commission late in March.

Mr. Burgess continued his final presentation by noting that parties opposing the railroads have cited efficiency of operation and increased traffic volume as ways in which the roads can absorb higher costs. He said these opponents have "freely revised" estimates of 1951 traffic, with their estimates ranging from 646 billion to 720 billion ton-miles. The railroad estimate is for approximately 635 billion ton-miles.

Most Reliable Figures

The railroad spokesman also told the commission that estimates of 1951 expenses submitted by these parties were "understated." He said those who would compute costs on a unit basis succeeded only in showing that the rise in expense per gross ton-mile has exceeded the rise in revenue per gross ton-mile.

"Our figures stand entitled to acceptance by the commission as the most

reliable figures that have been submitted in this case," Mr. Burgess argued.

Referring to the arguments offered by spokesmen for the various commodities, Mr. Burgess said their respective positions "are in principal and effect the same as in previous rate cases." In response to a question by Commissioner Cross, on the matter of proposed increased charges for protective service, Mr. Burgess said all parts of transportation have been hit by the price and wage increases, and the situation with respect to protective service "is no different."

Opposing Arguments

Meanwhile, prior to this rebuttal statement by Mr. Burgess, the commission heard representatives of some 65 private shipper groups. These included spokesmen for grain, coal, lumber, livestock, meat packers, fresh fruits and vegetables, and others. These parties generally contended that the carriers had not justified an increase in freight rates, and that any increase would either dry up traffic or drive it to other carriers. A few urged the commission to discontinue the interim increase.

Lee J. Quasey of the National Livestock Association said it was the association's position that further increases in live stock rates would not add to the revenues of the railroads. Karl D. Loos, speaking for the California Citrus League and the National Coal Association, urged the commission to deny any increases with respect to coal. He



CANADIAN LOCOMOTIVE'S FIRST "Consolidation Line" road diesel has rolled off the company's Kingston, Ont., production line, and will be the center of attraction during "Kingston Diesel Day" planned for August 1. The celebration will mark not only the "birth" of the maroon, gray and gold locomotive above, but also the pioneer road diesel built by Canadian Locomotive for the Canadian National back in 1928.

Special trains from Montreal and Toronto will carry guests to Kingston for the festivities and for a tour of the plant. Among those expected to attend will be the Rt. Hon. C. D. Howe, Canada's minister of trade and commerce and

minister of defense production, who will christen the locomotive "City of Kingston." Mayor Clifford A. Curtis, of Kingston, will present to an officer of the C.N. a bronze plaque commemorating the pioneer diesel of 1928 which bore C.N. road number 9000. Official host for the day will be Robert H. Morse, Jr., president of Canadian Locomotive.

The display locomotive is a two-unit 3,200-hp. road freight hauler weighing 520,000 lbs. It is powered by Fairbanks-Morse opposed-piston engines of the type which Canadian Locomotive is preparing to build shortly at Kingston. Aside from the lettering shown in the picture, the new locomotive bears the livery of the Canadian Pacific.

said the citrus league opposed increases in protective service charges and unloading charges. Several of the groups asked the commission, in whatever

action it decided to take, to maintain present rate relationships between different regions and between competing commodities.

Mid-Western Shippers Told of Improved Car Use

"Each serviceable railroad freight car traveled 10 per cent more miles each day during the first four months of 1951 than in 1948, reflecting greater efficiency in handling traffic," Caleb R. Megee, vice-chairman of the Car Service Division of the Association of American Railroads, told members of the Mid-Western Shippers Advisory Board at Milwaukee on July 11 and 12.

Traffic pattern changes brought on by the Korean crisis also resulted in increases in average length of haul, with the railroads hauling an average ton of freight an estimated 430 miles during the first half of 1951, as compared with 413 miles in 1948—the last normal year not upset by major strikes.

At the meeting of the board's loss and damage committee—attended by over 100 members—an informal talk on the "idiosyncrasies of the box car" was given by R. A. Johnson, manager of the Compartmentizer department of the Pullman-Standard Car Manufacturing Company, in which he summarized "what box cars can do," and "what they cannot do." Lewis Pilcher, executive vice-chairman of the Freight Claim Division of the A.A.R., presented a short talk on "Control of Weevil Infestation in Freight Cars" before the same group.

In discussion on the supply of flat

cars and covered hopper cars, it was suggested that the railroads should work to improve turn-around time of flat cars, and that shippers using these cars should endeavor to use other types of cars to the greatest extent possible so that the available supply can be stretched further. The alleged "perennial" shortage of covered hoppers—due, partially at least, to the increasing numbers of commodities moving in this type of car—is responsible for diversion of traffic from the railroads, several shippers pointed out, as users of these cars have had to seek other means of moving their products in order to keep operating.

A compilation of comparative rates and performance of rail and truck carriers in the handling of l.c.l. freight to and from a Chicago mail order house was presented to the board by H. B. Spamer, chairman of its L.C.L. Committee. Emil G. Stanley, chairman of the Publicity Committee, outlined plans for improving the news coverage of board meetings—including "localizing" and "popularizing" the news—and for redesigned board programs and proceedings.

In place of the regular luncheon, members were guests of the Union Refrigerator Transit Company at an outdoor barbecue held at the company's Milwaukee plant.

Illinois Raises Big Trucks' License Fees

Under the terms of Illinois Senate Bill 96, recently signed by Governor Adlai Stevenson, truckers in that state will be paying \$28 million more in vehicle license fees, beginning in 1954. The measure provides that additional fees will be paid by operators of all trucks having a gross weight of over 3,000 lb., beginning in 1952, and that further increases will take effect with the beginning of 1954. The 1952 hike has been estimated to cost the operators about \$20 million.

Light pickup trucks weighing less than 3,000 lb. will continue to pay the same fee as at present. But, in the higher weight brackets, the fees grow progressively steeper. For example: In the 3,000-8,000-lb. group, the present fee is \$7, the 1952 fee will be \$15 and the 1954 fee, \$21; in the 24,000-30,000-lb. group, the present fee (for six or more wheeled vehicles) is \$195, the 1952 fee will be \$420 and the 1954 fee, \$588; in the over 50,000-lb. group (eight or more wheels) the present fee is \$420, the 1952 fee will

be \$1,134 and the 1954 fee, \$1,588. Trailers too, will cost more—from \$1 for those of gross weight of 2,000 lb. or less to \$195 for those from 24,000 to 36,000 lb.

The additional funds will be used by the state to step up its road construction and repair program.

P.R.R., Long Island Get Relief from Signal Rule

Division 3 of the Interstate Commerce Commission has granted the Pennsylvania and Long Island such relief from the commission's signaling rules as will permit those roads to continue operating locomotives and cars without sealing or locking cut-out cocks to cab-signal warning whistles. The division's report, by Commissioner Patterson, was in the Ex Parte No. 171 proceeding.

The signaling rule from which the relief was granted is No. 136.553. It provides that a seal or lock "shall be maintained on any device, other than the double-heading cock, by means of which operation of the

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pneumatic portion of the apparatus can be cut out."

Freight Car Loadings

Loadings of revenue freight in the week ended July 14 totaled 779,454 cars, the Association of American Railroads announced on July 19. This was an increase of 191,208 cars, or 32.5 per cent, compared with the previous holiday week; a decrease of 9,952 cars, or 1.3 per cent, compared with the corresponding week last year; and an increase of 55,271 cars, or 7.6 per cent, compared with the equivalent 1949 week.

Loadings of revenue freight for the week ended July 7 totaled 588,246 cars; the summary for that week, as compiled by the Car Service Division, A.A.R., follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, July 7, 1951			
District	1951	1950	1949
Eastern	96,687	95,192	98,026
Allegheny	121,611	113,944	115,242
Pocahontas	18,680	17,583	34,903
Southern	90,291	85,631	84,741
Northwestern	115,641	101,513	109,590
Central Western	96,255	87,722	101,775
Southwestern	49,081	52,325	51,044
Total Western Districts	260,977	241,560	262,409
Total All Roads	588,246	553,910	595,321
Commodities:			
Grain and grain products	39,465	43,114	69,185
Livestock	6,178	5,048	7,150
Coal	27,503	26,154	78,181
Coke	14,074	13,421	8,481
Forest products	30,729	31,477	24,074
Ore	84,109	70,379	75,188
Merchandise l.c.l.	62,044	64,482	72,188
Miscellaneous	324,144	299,835	260,874
July 7	588,246	553,910	595,321
June 30	821,615	783,520	644,182
June 23	832,942	809,971	802,941
June 16	826,239	805,876	649,351
June 9	813,326	796,041	808,156
Cumulative total			
27 weeks	20,505,650	18,438,660	19,332,403

In Canada.—Car loadings for the week ended July 7 totaled 72,184 cars, compared with 85,999 cars for the previous week and 78,555 cars for the corresponding week last year, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
July 7, 1951	72,184	31,365
July 8, 1950	78,555	28,401
Cumulative totals for Canada:		
July 7, 1951	2,121,672	955,839
July 8, 1950	1,945,626	827,896



Air view of a section of cleared railroad route. The Wacouna airstrip and the construction camp at Mile 97 are visible

near the center of the illustration. All men, materials and equipment must be flown to this isolated camp

Construction Under Way on

Five years ago Seven Islands was a small village of 150 persons in the Canadian province of Quebec on the north shore of the St. Lawrence River estuary. Toward the end of 1950, the village grew suddenly to a town of 2,000 people. Today, with a population in excess of 3,000, and more on the way, it is literally bursting at the seams. This sudden growth is largely attributable to preparations for the construction of the Quebec, North Shore & Labrador Railway* which will extend from Seven Islands to Knob Lake in Labrador. It is being built to tap the fabulously rich iron ore deposits in northern Quebec and western Labrador.

The ore deposits have been reported by Dr. J. A. Retyl, chief geologist for the Labrador Mining & Exploration Co., to constitute a reserve of about 400 million tons and to have an overburden averaging only about 8 ft. in thickness. The fact that in some places the ore deposit has no overburden at all led to its discovery by an Indian who sent a sample to the government.

*For news stories reporting plans for the construction of this line see *Railway Age* of November 11, 1950, November 18, 1950, and July 9, 1951.

In 1939, the Hollinger-North Shore Exploration Company secured licenses from the provinces of Quebec and Labrador for the exploration and development of the ore fields. When the extensive nature of the ore deposit became evident, the Iron Ore Company of Canada was formed as a holding company for the financial interests of the Hollinger Consolidated Gold Mines, Ltd., the Hollinger-North Shore Exploration Company, the Labrador Mining & Exploration Company, the Republic Steel Corporation, the Hanna Coal & Ore Co., the Youngstown Sheet & Tube Co., the Armeo Steel Corporation, and the National Steel Company.

Development of the ore properties was dependent on the construction of a railroad line to tidewater. Aerial surveys showed that such a line was feasible. As projected the line will extend northerly from Seven Islands along the Moisie river, then along the Nipissis river and the Wacouna river to its headwaters lake, thence up a gorge to the Quebec-Labrador boundary line, which will be the summit of the new line at 2,056 ft. above mean sea level. From this point northerly the line will pass



This picture (left), taken during an 8-inch snowfall on June 7, shows a cargo of winches being unloaded at Knob Lake from a transport plane. The winches will be applied to the tractors in the foreground to which tractor pads are also



being fitted. The tractors were flown to Knob Lake in a U. S. Air Force "flying boxcar." Location (right) of the Knob Lake terminal of the Quebec, North Shore & Labrador as it appeared on the first day of railway construction

350-Mile Line to Canadian Ore Deposits

Inaccessibility of location and rigorous climate are among obstacles to be overcome in building railroad to reach rich iron reserves in Labrador

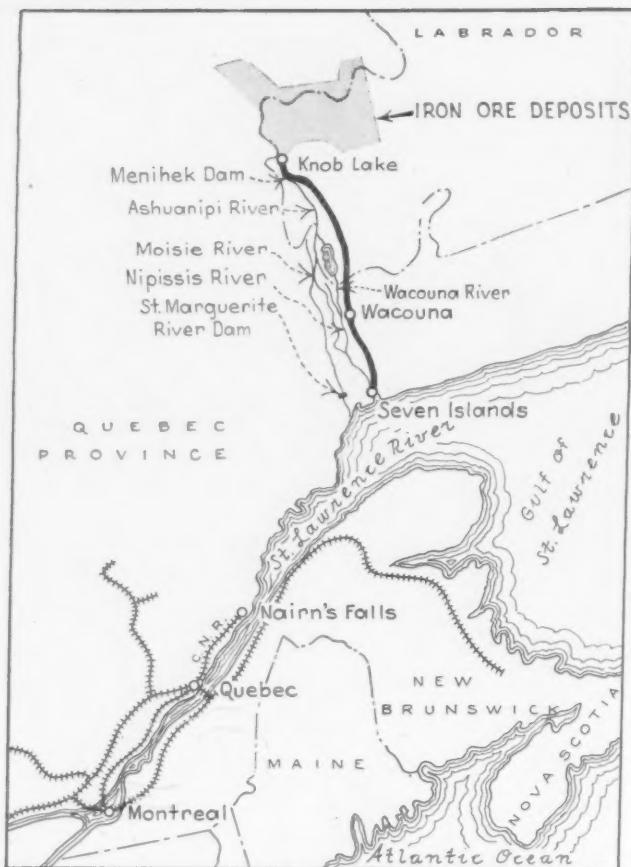
across a plateau having hundreds of small lakes, but in general in this region it will follow the course of the Ashuanipi river to the Menihek lakes and thence to the town of Knob Lake which lies at the southerly edge of the ore deposits. As projected, the line will be 350 miles long, which will compare with an air-line distance of 320 miles between Seven Islands and Knob Lake.

Plans call for strip-mining the iron ore and loading it by 8-cu. yd. power shovels into 30-cu. yd. trucks or onto belt conveyors for transportation to hoppers at the rail-head at Knob Lake. No spur tracks will enter the mine pits. Because of the rigorous winters in this region (temperatures go down to 50 deg. below zero), the mine and railroad will operate only about six months of the year (from May through October), and the ore will be stock-piled at Seven Islands for continued shipments while the mines and railroad cannot operate. When in opera-

tion, the railroad will haul about 50,000 tons of ore daily in five trains, each carrying about 10,000 tons in approximately 100 cars. The trains will each be hauled by four 1,600-hp. diesel-electric units to Seven Islands, where the ore will be unloaded in a dock bin, and thence to ore boats.

The railroad will be a single-track line having passing tracks, each a mile long, spaced about 30 miles apart. Switches of these sidings will be radio controlled. It is planned to use 132-lb. RE rail in the main track and 100-lb. rail in the sidings and yard tracks. About half of the ties required will be creosoted hardwood, with a small percentage of red pine, delivered by boat to Seven Islands. The remainder of the ties, mostly white and black spruce, will be obtained locally and will be given a field preservative treatment.

Gradients for the new line will favor the southbound



This map illustrates the isolated location of the Quebec, North Shore & Labrador project, which is being built to tap rich new ore fields



Temporary dock at the railhead on Seven Islands bay. At this point there is a natural harbor and boats with a 9-ft. draft can approach within 12 ft. of the water's edge

movement of loaded cars, the maximum ruling gradient in that direction being 0.3 per cent, compensated for curvature. Northbound, the maximum grade will be 1.8 per cent, also compensated for curvature. This grade will be about eight miles long, beginning at Mile 67. The line will traverse rough terrain from Seven Islands to Mile 94, where an elevation of 1,885 ft. will be reached. From this point to the summit at Mile 194, it will pass through rolling country with light grades, and

thence along a plateau, having a thin layer of muskeg, that slopes down to an elevation of 1,670 ft. at the terminus at Knob Lake. Maximum curvature will be 8 deg.; all sharp curves will be in the rugged country south of Mile 97.

About 25 steel bridges, ranging from 40 ft. to 680 ft. in length, will be required. Six of the bridges will be 200 ft. or more in length. The two major bridge structures will be one at Mile 12 over the Moisie river and another at Mile 328 over the Hamilton river. The Moisie River bridge will carry the track about 150 ft. above the river on a continuous deck structure of three main spans.

Another river crossing, over the Ashuanipi river, will be made over an earth-fill-and-concrete dam which, located about 35 miles south of the Knob Lake terminus, will be known as Menihek dam. The purpose of the dam is the development of electric power, and its construction will result in the enlargement of the Menihek lakes.

At Mile 11.5, just south of the Moisie River bridge, will be located the only tunnel on the line. This tunnel, now under construction, will be 2,250 ft. long.

Seven Islands Terminal

The general offices and main terminal of the railroad will be at Seven Islands. A locomotive shop for maintaining 53 diesel-electric locomotive units, and car shops for maintaining approximately 2,000 solid-bottom ore cars, will be constructed there, as will receiving and classification yards, as well as storage facilities.

The ore will be unloaded from the cars by a tandem dumper capable of handling two cars at a time. Twin mechanical feeders and belt conveyors, each of the latter having a capacity of 3,200 tons an hour, will deliver the ore to a single conveyor which will discharge it into a 1,200-ton surge bin on the dock. From the surge bin the ore will flow by gravity through mechanical feeders to two dock conveyors, each having a capacity of 4,000 tons an hour. Traveling loaders will pick up the ore from the dock conveyors and deliver it to vessels at the rate of from 6,000 to 8,000 tons an hour.

Hydroelectric power will be developed at two dams to supply power to the mines, railroad, townsites and terminals. Scheduled for first construction is the dam across the Ashuanipi river, which will have a generating capacity of 30,000 hp., scheduled for delivery in 1953. The other dam will be constructed on the Marguerite river, about 15 miles west of Seven Islands. This dam, which will also develop a generating capacity of 30,000 hp., will supply power to the ore docks and the rail terminal on the St. Lawrence estuary.

One of the unusual aspects of the project is the fact that the extreme cold, strong winds, and heavy snowfall prevalent in this area will make it impossible to carry on construction activities more than about six months in the year. As a consequence, with United States sources and reserves of top-grade ore being depleted at a rapid rate, the pressure of defense production demands that every day be made to count in the development and exploitation of the new ore mines.

Since Seven Islands is about 260 miles from the nearest existing railhead at Nairns Falls, Que., on the Canadian National line along the north shore of the St. Lawrence, all supplies, equipment and materials must be shipped to Seven Islands by boat. To handle incoming shipments a temporary dock was built on Seven Islands bay, which is a natural harbor that permits large boats to approach to within 12 ft. of the water's edge.

Despite the limited working season, the project is



Dominion power shovel (left) scooping out ore samples. The shovel was flown to Knob Lake in parts and reassembled. Drill rig for boring test holes is shown in background. Rail,



fastenings, bridge steel, power poles, equipment, and other materials (right) are accumulating in this storage yard at Seven Islands terminal

scheduled to be completed in 1954. This necessitates that railroad roadway construction be progressed from other points in addition to Seven Islands. Also, the construction of camps, vehicle roads, Menihek dam and generating plant, and other preparatory work at the mine must be accomplished in advance of the completion of the railroad, if ore deliveries are to be made during the same year in which the railroad is put into operation. An "airlift" was the only answer to the transportation needs of this problem in a country that is practically inaccessible to land vehicles.

Airplanes Deliver Heavy Equipment

Men and supplies were flown into the interior in an amphibious plane, until landing strips could be constructed near Knob Lake and at Wacouna near Mile 97, after which land planes have been used. A Fairchild C-119 "flying boxcar" was loaned to the project by the U. S. Air Force "in the interests of national security." This is a two-engine plane capable of flying 16,000 lb. at 200 m.p.h. It was used to fly 15 International-Harvester TD-14A tractors, bulldozer blades, a Dominion power shovel, and several Bucyrus-Erie 8-cu. yd. wheel scrapers to Knob Lake so that access roads could be built and grading operations started for the roadway itself. This equipment will also be used in the construction of camp sites, dam building, and mine operations.

One tractor or one wheel scraper constitutes a load for the C-119. The tractors were shipped complete, minus only their track pads and drawbars, and were driven on and off the plane under their own power. The power shovel was shipped in parts and reassembled at Knob Lake. When weather permits, the C-119 makes three round trips daily between Seven Islands and Knob Lake.

Aside from the "flying boxcar," the fleet of planes now totals 12 ships, including two helicopters which are used for the most part in survey work. Some planes are used

mostly for flying fuel, groceries and miscellaneous small supplies, while others are used for transporting men, tools and materials.

The planes are in almost constant service and, when weather conditions ground them (there was an 8-in. snowfall on June 7, 1951), work schedules are greatly affected. And, when the weather ameliorates, the planes must give priority to food, clothing and shelter materials before other supplies and equipment can be carried.

Progress of Work

Although it is expected that the project will be completed in three years, only the 1951 construction schedule is definite at this time. This calls for working north from Seven Islands as far as Mile 75, north from Mile 97 at Wacouna to Mile 125 and south from Mile 97 to Mile 90, and from Mile 350 at Knob Lake south to Mile 330.

The general contractor on this project—Cartier-McNamara-Mannix-Morrison-Knudsen—is a firm formed by the combination of four large Canadian contractors, i.e., Cartier Construction, Ltd., McNamara Construction Company, Fred Mannix & Co., and Morrison-Knudsen Company of Canada. The Iron Ore Company of Canada is handling the work on the Menihek dam, the mine roads and townsite, and the railroad construction north of Mile 330.

At present, air strips have been completed at Seven Islands, Wacouna and at Knob Lake; the temporary dock has been built at Seven Islands; a large number of earthmoving units has been brought in for the railroad clearing and grading, which has been completed as far as Mile 11.5 from Seven Islands; and, as stated, work has already been started on the tunnel. Clearing and grading for the railroad at the Knob Lake end has been started and about one-half mile of track has been built north from Seven Islands.



A cool, wet growing season and simultaneous harvests in different areas complicate this year's annual rush of newly harvested grains to storage and market centers

The "Granger" railroads in the six "hard" wheat states of the Midwest have reported that this year they are in better condition to deal with the annual winter wheat harvest than in any year since 1942. And for the first time in many years they will be aided by country storage space which is reported to be ample for all predicted crops. The sole possible flaw in what looked like a "perfect" set-up for the transportation of this year's harvest, may be the recent uncertain and cool, wet weather in the winter wheat belt, amounting to serious floods in some areas.

This year's annual meeting of Kansas City grain and railroad men for the discussion of mutual transportation problems in connection with the winter (or "hard") wheat harvest—this year held in connection with the Trans-Missouri-Kansas Shippers Board's June meeting in Kansas City—centered around conflicting crop predictions, crop failures, and late harvests resulting from an unusually wet growing season, and the problems incident to the simultaneous ripening of Oklahoma, Kansas and Nebraska wheat crops. Similar discussions are held in other grain centers in the "wheat belt."

Car Supply

The seven principal grain roads in the six "hard" wheat states marshalled and conditioned over 23,000 box cars for this season's movement of grain. In addition they are anticipating the delivery of 3,050 new box cars from the car builders in time for use during the harvest season:

	Conditioned Box cars available (including cars under load)	New Box cars expected from builders in time for harvest
Santa Fe	5,368	1,050
Rock Island	2,100	...
Missouri Pacific	9,250	...
Union Pacific	3,000	
Burlington	1,200	1,500
M.-K.-T.	540	...
Frisco	1,800	500
	23,258	3,050

To augment the supply of Class A box cars (the only cars suitable for grain loading), the granary roads have been upgrading as many box cars as possible by re-coopering, and by means of temporary paper linings. Some roads are also using stock cars—of which there is a temporary surplus—equipped with temporary wood, plywood, tin or paper linings for local movements. Over 900 cars have been so equipped, though these cars are not as durable in turn-around service, nor can they be used into principal grain terminals where they are frequently required to move out under load. Two other roads—the Kansas City Southern and the Chicago Great Western, not normally heavy grain lines—are expecting delivery of a total of 1,100 new box cars in time for use during the annual grain harvest.

The Car Service Division of the Association of American Railroads, because less than 30 per cent of the granary roads' box cars were on home lines, issued orders 78 and 79 directing immediate return of these cars to owner lines early in May. The response to these orders by Eastern and Southern roads appears to have been exceptional. One important grain line reported that as a result of these orders, the percentage on line of its box

Grain must be moved promptly from the point of harvest to market or storage facilities within the short harvesting period. To serve the grain territory adequately, the granger roads must maintain a large network of seasonal, light-traffic secondary lines, as well as adequate terminal facilities to accommodate the peak traffic during harvesting season.



car ownership rose from 30 to 51 per cent in less than 30 days. Other roads reported similar experiences. The granary roads, in announcing the results of these orders in improving their car supply to wheat men, gave unusual credit to the Eastern and Southern lines.

The early winter wheat crop in Oklahoma apparently has fallen behind the predicted volume—with production in some western counties ranging near failure—with the result that many of the cars allotted for its movement will be available for loading in other harvest areas. Early loadings of new grain have been running about 60 per cent of last year's loadings on corresponding dates.

Ample Storage

Wheat and railroad men report that this year—for the first time in many years—there is ample country storage space for all grain, based on current crop predictions. Although it is anticipated that the crop will be very light in some areas, and heavy in others, there appears to be ample country storage to accommodate the combined production of the six hard wheat states.

Elevators in the terminal and subterminal markets in the wheat area have ample vacant capacity to handle this year's crop—now estimated to be about equal to, or a little below, last year's production. Millers and consumers, both in the production areas and in the grinding centers to the east and south, claim to have adequate vacant storage to accommodate any grain purchased during the current harvest.

The amount of grain which will be moved east for milling will depend on the milling quality of the wheat harvested. If good quality milling wheat is forthcoming—and the price is "right"—there will be an eastward movement. But because there is ample storage capacity at the eastern grinding centers, this movement is not

expected to produce any acute transportation problems.

There has been comparatively little export of grain in recent months, though this traffic has brightened with the release of grain for shipment to India. There are occasional shipments to European and Mediterranean countries, but these are spotty. The bulk of these exports are moving out of Gulf of Mexico ports. It is not anticipated, however, that this traffic will be large enough during the harvesting season to cause trouble.

Texas normally produces less grain than it grinds. And Oklahoma normally harvests more than it grinds, with much of the surplus going to Texas. Indications are that Oklahoma may not produce enough this year to meet its own grinding requirements, and observers anticipate a movement from Nebraska, Kansas and Colorado into Oklahoma and Texas during the harvest season. The granary roads do not consider this possible move with alarm, because the cars will, for the most part, remain in their possession and can be quickly returned to the harvest stations for reloading.

As is the regular procedure during the harvesting season, some grain inspection bureaus have placed their inspectors on duty seven days a week, including July 4, from dawn to dark, in order to expedite the inspection and release of newly arrived cars. The railroads hope that other trade centers will do the same. Special arrangements were made to get samples from newly arrived cars in the Kansas City Terminal to the Board of Trade in that city so that the grain could be sold, and the car reconsigned in the shortest possible time. The railroads supplied "car spotters" at all principal terminal and subterminal grain yards to help inspectors locate incoming cars for inspection.

The weather is the big unknown which has overturned all these carefully laid plans. The ripening season in Oklahoma and Kansas was unusually cool and wet, with



What looked like a smooth movement of wheat was abruptly upset by the flash floods that started in the wheat fields of Kansas in the middle of June and reached a climax with crippling floods at major railroad terminals. This photograph of the Rock Island's Armourdale yard in Kansas City shows carloads of wheat trapped by the quickly rising waters. Empty tank cars floated and drifted with the current—as can be seen in the center and in the distance in this photograph taken before the crest of the flood had passed

the result that crops normally ready for harvest early in June did not ripen until about July 10. Somewhat similar conditions prevail in Nebraska and eastern Colorado, though the crops there have not been quite as badly retarded.

Real trouble began during the week of June 20 when local flash floods in Kansas washed out many light branch lines maintained primarily for the movement of grain. But traffic moved without serious delays. However, heavy rains which followed in the second week in July brought the worst floods ever recorded in eastern Kansas. Flood waters rose 10 and 12 feet over flood stage in a matter of hours, giving the railroads little or no time to remove equipment. Large numbers of loaded grain cars were completely submerged in yards at important grain centers.

The grain in some elevators was spoiled by rising waters; floods ruined crops and all but stopped harvesting in many areas, and in others ruined harvested grain stored on the farm. The wet weather which blanketed most of the grain belt before and during the flood, did of course reduce the demand for railroad service.

There was considerably less damage in western Kansas and in Nebraska, so that the wheat harvest there has been moving fairly normally. However, the railroads have been hard pressed to handle this grain—partly because the normal grain markets in and around Kansas City are flooded out, and partly because of the terrific demands placed on unaffected granger roads to handle traffic diverted from afflicted lines. The movement is, at this writing, being made reasonably promptly in spite of all the obstacles, with most of the grain moving to country storage facilities outside of the flood belts.

One serious aftermath of the flood has been, and will be, its effect on the supply of class A grain cars. Many of these cars were caught in the floods, and will require extensive cleaning and repair before they can be made fit for grain service. Others are isolated on washed-out lines, and will not be available until extensive track repairs can be made. Many of these branches cannot be repaired until more vital trunk lines have been re-

stored to service. This disruption of the car supply will have some effect on the handling of the northern and northwestern grain movement, because the cars normally move from one grain area to the next, following the harvest.

The "hard wheat" granary roads were optimistic last June about the possibilities of getting through this year's harvest without having to impose embargoes or resort to the issuance of permits. And it looked as though they would be able to achieve their goal—until the weather acted up. The granger roads to the north and west still are mapping plans to make this year's grain movement as nearly "normal" as possible. Their success, and the success of the roads in the flooded areas in "digging out" of their troubles, will depend to a very large extent upon the cooperation of terminal operators in the prompt unloading of cars so as to prevent congestion and delay.

Drying Could Be Troublesome

There is another possibility which could cause trouble. If the harvested grain, as a result of the unusually wet season, has a high moisture content, much of it will have to be shipped directly from the harvesting stations to big terminal market areas for drying because these are the only points with driers capable of handling a large volume.

Country elevators are not equipped with driers or have very limited drying capacity, and cannot store wheat with a high moisture content. If this exceptional need for drying should occur, it may not be possible to get the fullest use from grain cars, because there may be some piling up of cars in the terminal areas awaiting turns at the driers.

Experienced wheat men say that a wheat crop has to be "lost three times before it is gone," so in spite of the disheartening happenings in the six-state "hard wheat" belt, a spell of good weather may produce a bumper crop in the other wheat areas and make for what the railroads hope will be a smooth wheat movement. But whatever happens, no railroad or grain man will soon forget this year's grain harvest in Kansas.

SAFETY ENTAILS BIG RESPONSIBILITIES

By W. J. PATTERSON
Member, Interstate Commerce Commission

High speeds and heavy loads handled with modern rolling stock require tighter standards of maintenance and inspection—Problems of design also are involved

Recent developments in motive power and cars have contributed to a considerable extent toward train operation at higher speeds with long and heavier trains traveling greater distances without intermediate stops. This trend puts a greater responsibility upon mechanical officers to know that the design and maintenance of equipment is adequate to meet the demands. Failure of truck frames, wheels, axles, couplers, other portions of car structures, or power brakes can be disastrous, not only in so far as a particular train is concerned, but to other trains occupying the same or adjacent tracks.

Diesel Wheel Failures . . .

The increase in wheel loading, together with greater speeds and higher braking ratios, has resulted in numerous wheel replacements because of thermal cracking. The prevention of serious accidents because of wheel failure must necessarily require frequent and thorough inspection by competent employees.

The number of cases where driving wheels under diesel

This article is adapted from an address before the meeting of the Mechanical Division of the A.A.R., held at Chicago June 25-28.

locomotives have failed because of thermal cracking, fractures originating at the hot stamp markings, or progressive fractures originating in rims and plates because of the development of excessive internal stresses, is alarming. Yet we find that regular runs are being lengthened considerably and with little or no inspection at intermediate terminals. During the early part of this month we investigated the derailment of a passenger train which resulted in injury to a number of passengers and employees, which was caused by the failure of a 36-in. Class C driving wheel under the second unit of a two-unit diesel locomotive.

And a Result of One

This accident occurred on the westward track of a double-track line and both main tracks were obstructed by the derailed cars. Approximately eight minutes later an eastbound passenger train was brought to a stop by a flagman at the scene of the accident. Had there been a slight difference in the timing the results might have been far worse.

One other serious factor in considering diesel wheel failures is the fact that enginemen, riding in the control compartment of the leading unit, are not in a position to readily detect defects in the running gear of trailing units. This is clearly illustrated in the derailment to which I have just referred. In this case the enginemen were not aware of anything being wrong until the train had parted, causing an emergency application of the train brakes, although the broken wheel had badly damaged the rails and had been derailed for a total distance of almost 2,700 ft. before the general derailment occurred. Railroad offi-

cers and members of the special joint committee consisting of representatives of manufacturers and railroads should give prompt and serious consideration to this problem.

The service demands upon our freight-train power brakes have become severe in recent years. We find a large number of cars with obsolete K type brakes still in service and, even more alarming, we find considerable evidence of lack of proper maintenance on cars equipped with AB brakes.

Although the investigation, which led to the adoption by the A.A.R. Mechanical Division of the AB brake in 1933 and to the commission's order of September 21, 1945, in Docket No. 13528, was instituted in 1922, we find that as of March 31 of this year there were 116,518 cars of U. S. ownership still in interchange service with the K type brake. Of this number, 76,241 are scheduled for conversion to AB brakes and the remaining 32,393 scheduled for retirement.

In view of the current shortage of cars we found it necessary in the public interest to further amend our order of September 21, 1945.*

Mandatory Brake Maintenance Rules?

Mechanical Division committee members have been negotiating with representatives of the commission's Bureau of Safety for some time relative to the rules contained in the pamphlet entitled "Maintenance of Air Brake and Air Signal Equipment on Locomotives and Cars." Considerable progress has been made toward formulating a satisfactory set of rules, but up to this time no provision has been made to insure compliance with such rules. The difficulties experienced during the last few winters with excessive brake pipe leakage, only a portion of which was a result of inferior material, and the excessive number of inoperative power brakes found by inspectors of the Bureau of Safety while making terminal air-brake tests are indications of failure on the part of many railroads to properly comply with the existing air-brake maintenance rules. It is evident that there is a need for some action to make these rules mandatory and for some provision to insure proper compliance by all member railroads.

Even though all cars were equipped with AB brakes and properly maintained the power brake situation would not be entirely satisfactory. The wide range in braking ratio of from 18 per cent, or often lower, to 75 per cent or higher of the weight of a car results in unequal braking and serious damage to equipment and lading, particularly in the operation of long trains. The ABLC variable load brake has been in service on 398 light-weight hopper cars for almost two years and, I understand, has been functioning very well. If this brake has been sufficiently developed to properly reduce the range in braking ratios between empty and loaded cars action should be promptly taken to make it standard where necessary to obtain proper spread in braking ratio.

Inadequate Accident Reporting

As a member of the Committee on Harriman Awards I have been much interested in the past few years with respect to the manner in which injuries sustained by railroad employees are being reported to the commission. I have noted that the greatest opportunity for the occurrence of these injuries appears to be in connection with maintenance, both mechanical and right-of-way.

*See "I.C.C. Grants More Time For AB Brake Installations," *Railway Age*, June 18, 1951, page 65.

The accident records indicate that carelessness is a heavily contributing factor. A great many injuries result from carelessness of fellow workers and it behooves each man, not only to consider his own safety while at work but also that of those working with or near him. The files show that many injuries that should have been reported were not included in the reports. With some carriers there can be little doubt but that this has been done deliberately, but in most instances ignorance of the commission's reporting rules seems to be the underlying cause.

I am led to believe that many foremen and supervisors are under the impression that if the injured party can report for duty within the three-day period and is able to perform some portion of his duties, this is all that is necessary to remove the injury from the reportable class.

Under the rule the employee must be able to perform *all* the usual duties of his occupation without assistance, and not merely certain work that he may be able to do during recovery. Railroad officers should not allow zeal for a good personal injury record in their departments to subject their employer to liability of court action and possibly heavy fines. Remember that in determining whether an injury is reportable, the reporting officer must depend to a great extent on the information furnished him.

Better Maintenance, Greater Safety

The Locomotive Boiler Inspection Act of 1911, as amended, and the rules prescribed thereunder, establish minimum safety requirements for steam locomotives and locomotive units propelled by power sources other than steam.

It is significant that safety, dependability, economy and road performance are characteristics that change with and are dependent upon the physical condition of locomotives. It is generally recognized that a high standard of maintenance will result in a high standard of safety. We also know that proper inspection and adequate repairs are essential to reliable and durable locomotives and that the attendant costs per unit of transportation are less than for indifferently maintained locomotives.

The rapid transition from steam power to use of diesel-electric locomotives has been accompanied by the usual problems incident to what may be termed a revolution in motive power. Some of the features of diesel-electric locomotive operation which our experience indicates should be given careful attention are:

Maintenance of clean engines, fuel-oil tanks and electrical equipment.

Oil upon floors of passageways has resulted in numerous injuries as a result of falls.

Dirty and fouled electrical equipment has caused flash overs and resultant injuries and fires have resulted from debris on fuel-oil tanks.

Crank-case explosions resulting from improper maintenance of engines and lubricating systems have been the source of a number of injuries.

Lubrication failures of support bearings or traction-motor bearings have caused several serious accidents.

Operation of diesel-electric locomotives on through runs with cursory and inadequate inspections at intermediate inspection points encourages accidents. I strongly urge that immediate consideration be given to establishment of thorough and meticulous inspections of through trains at intermediate points and positive instructions that units found with reportable and dangerous defects be set out for proper repairs be placed in effect.

If YOU Owned a Railroad .

By CLIFFORD A. SOMERVILLE
Editor-in-Chief
Boston & Maine Railroad Magazine

Mr. Somerville's novel approach to better employee understanding of railroad financial problems first appeared in the April 1951 issue of the Boston & Maine Railroad Magazine. It so favorably impressed the editors of *Railway Age*, both for its conception and its execution, that permission was obtained to reprint it in full. The figures cited refer, of course, to the B. & M., but the underlying idea of the article is readily adaptable to any other railroad.

Ever think you'd like to own a railroad? Just for the fun of it let's suppose that the Boston & Maine, at the beginning of 1950, had been distributed in equal territorial shares among its 13,139 employees. On this basis, dividing the total number of employees into 1,702 miles of road operated, your share of the railroad would have been about one-eighth of a mile.

Not very big, perhaps, but worth \$19,567 on the basis of the B. & M. valuation in 1950, a substantial bit of property in which you could take real pride while having the thrill of management and being your own boss!

Of course, along with your little railroad, you would have the same proportionate share of B. & M. equipment, its trains, locomotives, stations and facilities, also an equal share of its revenues, and an equal share of responsibility for its costs of operation and its indebtedness.

The B. & M., incidentally, had a fairly good year in 1950, financially speaking, the best in a long time, so naturally your share of the railroad would have benefited accordingly.

Now let's reduce the B. & M.'s financial progress during 1950 down to the exact scale of "The Eighth of a Mile Railroad" you acquired and see just how you came out.

Your little railroad's share of the B. & M.'s total income was \$6,664. Hauling freight gave "The Eighth of a Mile Railroad" revenue totaling \$4,978; passenger revenue amounted to \$881; mail handling gave your road \$303 (but that amount included a retroactive adjustment covering the last four years); milk accounted for



Railroad revenues may look big—but payrolls, taxes and other expenses eat them up in a hurry



You can't spend more than you take in; with all expenses going up, you have to find ways to increase your income, or curtail your operations to stay within your present income

about \$101; and express added \$67 more; while incidental revenue—including rentals from buildings and other properties, demurrage charges on freights cars, dining car services, station and train concessions and miscellaneous income — amounted to \$334.

"Your" railroad's total revenues were substantially above 1949 income for the same proportionate share of the B. & M., so you were off to a good start in your first year as a railroad "owner."

You Have to Spend Money, Too

Out of your revenues, you spent a total of \$6,480. The No. 1 item of expense was for wages and salaries. This amounted to \$3,468, or 52 per cent of your total income.

Materials and supplies, such as

track spikes and rails, ties and timber, tools and paint, office stationery and typewriters, and lots of other things, cost you \$658, your second largest item of expense.

Next largest expense was for taxes, about 10 per cent of your total income. You had to pay your federal income tax and then pay Uncle Sam a payroll tax of 6 per cent to provide pensions for your employees, another half of 1 per cent to provide unemployment benefits for your employees, along with property and franchise taxes to state and local governments. Altogether, your tax bill came to \$654.

For fuel and coal to operate your locomotives, you spent another \$358.

In railroad accounting practices—as in all sound accounting procedures—there's an item of deprecia-



Brother, have you got problems?



How about it? Is it still fun to run a railroad?

tion. This charge is set up to provide the cash required to meet payments for replacement of locomotives and other equipment after they have been worn out. That the depreciation allowed by the Interstate Commerce Commission and the Bureau of Internal Revenue is inadequate is shown by the fact that you are now replacing box cars which, 20 years ago, cost about \$2,200, with new cars costing \$5,000.

There is also a retirement charge in the income account to cover operating costs incurred in disposal of equipment or structures after they have been retired. These two items together represent a charge of \$328 against your income account, similar to all other operating expenses.

In interchange of freight carried by all railroads, your railroad had to make use of freight cars owned by other railroads and they, in turn, had the use of your freight cars when on their lines. By mutual agreement, a daily charge of \$1.75 is assessed on each railroad for every day that freight cars owned by another line remain on its road. Since "The Eighth of a Mile Rail-

road" is a terminal road, you had a larger percentage of foreign-owned cars on your line than you were able to provide of your own cars to put on foreign lines. As a result, your payments for "per diem" use of foreign-owned freight cars last year amounted to \$296. This, plus charges against your road for its share of joint usage of certain stations where your road has terminal connections with other railroads, amounted to \$322.

You also found it necessary to buy new locomotives and freight cars and, not having sufficient cash to meet such large expenditures, you bought them on a conditional sales or time payment plan, just as you had purchased a new automobile the year before. So you had to make regular payments on principal and interest to the bank that loaned you the money to buy the equipment. These interest payments, plus fixed interest charges on your mortgage, and rental costs for small railroad lines leased by your railroad—all of which come under the heading of "interest and lease rentals" in railroad accounting—totaled \$317.

All other operating expenses, and these included such important items as claims for freight loss and damage, and personal injury claims, cost "The Eighth of a Mile Railroad" another \$287.

The year's good business—which really became good only after the outbreak of trouble in Korea last June—made it possible for your railroad to meet not only current and fixed obligations, but to apply \$88 toward reduction of your debt.

This helped to pay off part of the principal on those diesel-electric locomotives your road purchased, also to put money into the sinking funds to retire mortgage bonds.

All in all, your expenses were pretty heavy, but you arrived at the year-end with a net income of \$184, a pretty small return, by the way, on the investment of nearly \$20,000 in your railroad.

Part of this net income, too, was due to a "bonus" from Uncle Sam in the form of a retroactive payment for carrying the mails over your railroad since January 1947. This payment really represented income that should be allotted to four separate years, but it came in a lump sum and so helped to build your 1950 revenues very substantially.

Good going, you say, and you are right, so far anyway. Your little railroad was able to meet all its operating costs, tax assessments and other current charges, had enough left to meet its debt and mortgage obligations, and still had a balance of \$184.

That should call for a little celebration, perhaps a dividend for the wife in the way of a night out to dinner, along with that permanent she's been wanting, and maybe a new hat.

Remember the Stockholders!

Maybe, but first there are one or two problems to consider. First off, your good friends, Bill and Jack and Harry, the fellows who invested money in your railroad by buying stock when you acquired it, are expecting some return on their investments.

After all, you had a good year, and you have more than enough left in the "kitty" to pay a reasonable dividend and thereby keep your stockholders happy and—and this is important—to keep them willing to invest in your enterprise again, if you need their help.

So you pay a dividend and your net is reduced to \$25.

Not very much, is it? Of course,

you had your salary out of "The Eighth of a Mile Railroad" so you can still keep the wolf from your door, but that big profit you had expected, as the "owner" of a railroad, looks pretty small now, doesn't it?

You can still take the wife out for dinner, but looks as though she'll have to forego that permanent and a new bonnet a while longer.

And you have other problems to solve yet—that is, if you plan to continue to operate "The Eighth of a Mile Railroad."

Let's take a quick peek at 1951. Sure, even a crystal-gazer can't tell what lies ahead in these confusing times, but you have a year of experience in railroad management behind you and you must have learned a few things.

It's Going to Cost More

For instance, back in midsummer, you noticed that suppliers began charging you more money for the materials and supplies you had to buy to keep your railroad going. About the same time your wife began telling you that she needed a larger weekly allowance for food. And by the end of the year you found that railroad materials generally were costing you about 10 per cent more.

Taxes are going up, too! That means that rental costs and interest rates on loans may be increased. And you already are aware that wages and salaries of your employees are going up in 1951!

What do all these things add up to?

No one can say exactly, but every indication is that it's going to cost a lot more to operate your railroad another year. Which means that your neat little cash balance from 1950 will change to a substantial deficit this year, if business and income remain the same as last year.

Brother, have you got problems!

Of course, there are one or two possible solutions to your problems. You can find ways to increase your income, or you can curtail operations to stay within your income. That's one lesson you learned early in your first year of railroad management—you can't spend more than you take in and your only income is from the sale of your railroad's services, the transportation of freight and passengers.

"How about raising passenger fares or freight rates?" you ask. Sure, only you have to ask the I.C.C. about that and maybe the commission will let you and maybe it won't.

And if you get an increase, will it be enough to solve all your problems, or will it drive some business to the trucking companies that compete with your railroad? And if that happens, will you have to curtail your services to the public, which means a reduction in the number of people your railroad employs?

Is It Still Fun?

How about it? Is it still fun to run a railroad?

But that, in simple terms, was exactly the position of the Boston & Maine management after the close of 1950 and again we say 1950 was a good year, compared with many in the past.

Just restore "The Eighth of a Mile Railroad" to its proper size by multiplying your share by the 13,139 employees who received like shares and you have the 1950 financial story of the B&M.

The figures are bigger, but the problems are just the same, on a larger scale.

The company's gross revenue was \$87,558,262. It paid out for operating expense and for taxes, rental and interest charges, reduction of debt, contingent charges, a total of \$85,144,512. This left a net income of \$2,413,750, which equals your proportional net of \$184 on your "Eighth of a Mile Railroad."

That \$2,413,750 looks pretty big, doesn't it, until you strip it down to the scale of your proportionate share in the railroad as one of the 13,139 men and women who, while not owners of the railroad, really share equally in the responsibilities of its operation.

Out of that \$2,413,750, the B. & M.'s directors voted to pay a dividend—the first since 1932—to the hundreds of men and women, including many B. & M. employees, who have been patiently waiting for some return on the money they have invested to keep the company going.

Payment of this dividend is to be made under a new capitalization plan approved by the company's stockholders last year and recently sanctioned by the I. C. C.

This left the company's net income for 1950 at \$330,516, which means exactly as much to a railroad with a property valuation of \$257 millions as the \$25 balance would mean to "The Eighth of a Mile Railroad" with a valuation of \$19,567.

And 1951 poses as many problems for that \$330,516 as it did for "your" railroad's \$25. It would be wiped out and replaced by a deficit

this year on the basis of increased costs of materials and wage hikes.

That is why the B. & M. management joined, in January, with other eastern railroads in asking the I. C. C. for an increase in freight rates.

What is granted may take care of the increasing costs. Also, any increase may drive some business away from us and result in insufficient gains to offset in full, the higher costs in prospect.

If that should happen, the B. & M. would face the same problem "The Eighth of a Mile Railroad" found—to curtail service to the public and reduce its payroll in order to keep within income.

These are not pleasant facts for any business to face, but they are the facts our railroad faces.

All Employees Can Help

There are some definite ways in which *every* Boston & Maine employee can help our company to meet its critical problems, and at the same time help preserve their jobs!

Many of us can help, specifically and very importantly, by cutting down on our heavy expenditures for claims on freight lost or damaged. Every dollar of the total of \$618,155 spent for such loss and damage last year was sheer waste of money that might spell the difference between profit and loss this year, and such claims do not help to win friends for the railroad, either.

A little extra care on the part of engine and train crews, switching crews, freight handlers and loaders, could accomplish wonders in reducing this waste!

Almost any employee can help to cut down our terrific bill—last year it was \$1,083,920—for personal injury claims by employees.

The exercise of more *care*, more *intelligence*, every day in the year, can save many employees and their families from suffering and hardship due to injuries and at the same time reduce the railroad's expenditures for such claims.

All of us can help by trying harder, day by day, to work more efficiently. More efficient production means *more effort* to win new freight and passenger business for the railroad and *more effort* to please and keep the customers we have.

In short, we can all help to make our railroad organization more efficient by assuming a sense of individual responsibility for "The Eighth of a Mile Railroad" that each job represents.

American railroads are spending approximately 18 per cent of their gross revenue on equipment maintenance. According to Interstate Commerce Commission reports, more than \$1½ billion is spent each year in this manner. That's a lot of money. More important, it represents a lot of critical manpower and material. In today's emergency conditions, all railroads can expect periods of material and equipment shortages, plus possible absence of manpower—particularly trained and experienced personnel. Maintenance efficiency will be increasingly important to keep equipment available and operating under heavier loads. This article outlines the values of collecting, measuring and analyzing maintenance facts.

Examples of specific savings by study and analysis are innumerable. This one from diesel maintenance practice will be sufficient for introductory purposes:

It was routine on one large road to replace all anti-friction bearings in traction motors whenever the motors were opened for any cause. This extreme practice was followed in an attempt to insure trouble-free service after there had been several costly delays due to failure of reused bearings.

A study was made of this procedure and the reasoning appeared in error because the all-new bearing program did not substantially improve the service record. Further checking also indicated bearing costs were high and performance below that achieved by similar properties.

These findings led to a controlled test program and

Get the Most

detailed analysis of all bearing failures and costs. The results of this study showed several things: First, that used bearings could be successfully reused. Second, many failures formerly attributed to reused bearings were due to poor maintenance practices. Therefore, an education program was undertaken. Third, by marking the bearing shells so they could be replaced 90 deg. or 180 deg. from their former position, maximum life could be obtained. Last, and not least, by having a record of individual mechanics who worked on particular units, it was possible to determine good or bad workmanship, and to reward or correct the individuals as required.

Similar examples are found on many railroads and serve to illustrate the significant gains to be obtained from planned maintenance. It is seen, then, that by first collecting accurate data on cost and performance, second, collating and intelligently analyzing this information and third, doing constructive thinking about the problem, it was possible to (1) correct wrong impressions, (2) develop better practices and (3) prove that what appeared to be an engineering deficiency was largely a lack of understanding which was corrected by education.

Cost Accounting Systems

Railroad operators, particularly large operators, can effect substantial savings and improvement in operating efficiencies by the proper use of preventive maintenance and cost accounting systems. Satisfactory systems are not difficult to lay out or follow, once the basic elements are clearly understood.

In normal service, maintenance costs before the vehicle is retired are often from six to eight times as much as the original purchase price. These costs result from a

A typical time card showing the distribution of a day's work by one man

**A requisition form from
which materials are
charged**

For Your Maintenance Dollar

By A. L. DAVIS
Manager of Service, Transportation Divisions,
General Electric Company, Schenectady, N. Y.

Preventive maintenance of equipment must be accompanied by controls or expenditures will be excessive—A study of basic elements in a system of cost control for diesel maintenance

continuous flow of relatively small expenditures that are difficult to control. They are more like the flakes of a snowfall. It isn't an individual flake that impedes your progress, but it is accumulation in depth that causes difficulty. Realizing the nature and the costs involved emphasizes the need for an orderly or systematic method of examining them. Uneconomical and inefficient maintenance often means the difference between loss and profit. Labor rates continue to increase; therefore, more and more attention must be given to economical use of maintenance dollars. Also, with increasing competition, delays due to equipment or maloperation are going to be more conspicuous in the service record.

The cost accounting or control accounting to be used in conjunction with an effective preventive maintenance program should have two characteristics. One of these is a method of associating or identifying the money spent with the specific equipment requiring the expense. The second requirement is to associate these costs with the service period when they were incurred. Since most transportation equipment bears identifying unit numbers, such as road or locomotive numbers or car numbers on rolling stock, it is not difficult to fit these numbers into an accounting procedure. The selection of a service period is a little more involved and will be governed, to a large extent, by the scope of the cost accounting and maintenance system and the size of the property involved.

Factors of Deterioration

Three major factors are largely responsible for deterioration or wear on equipment. These are time, miles operated, and total horsepower-hours delivered.

Certain items such as paint and the exterior deterioration of equipment are a function of time. Such parts as gears, wheels and axles wear out in almost direct proportion to miles traveled. The wear rate on prime moving parts, such as pistons, engine bearings and valves is closely related to total horsepower delivered. The wear rates on other components vary as functions of two or more of the wear-producing elements. Traction motors are affected by mileage, horsepower delivered and, to a limited extent, time. Main generators and motor generator sets on straight electric locomotives are affected chiefly by total horsepower-hours delivered, and time.

Two methods of measuring service are commonly used today. One is the number of days the unit is in service. The other is the miles the unit operates. Both of these measures of unit performance leave something to be desired. Measuring by time alone leaves out the factors of "distance traveled" and "work performed." Work performed, or total horsepower-hours output, is an important factor in locomotive and motive power maintenance

MODERN AMERICAN RAILROAD	
EQUIPMENT FAILURE AND TROUBLE REPORT	
Available <input type="checkbox"/>	Code No. <u>None</u>
Questionable <input checked="" type="checkbox"/>	Date <u>2/23/51</u>
Unavailable <input type="checkbox"/>	Road No. <u>4026</u> Loco. Ser. No. <u>76151</u>
Engine No. <u>47151</u>	"S" No. <u>—</u> Mileage <u>541519</u>
Location <u>Bentwicks</u>	Type of Service <u>Chartles</u>
B.O. Report	Date <u>2/23/51</u>
<u>Air compressors cutting out to high (150%)</u>	
Time Lost <u>None</u>	Chargeable Delay <u>None</u> Removed from Service <u>None</u>
Description of Equipment <u>Compressor governor</u> Serial No. <u>17654215</u>	
Giving Trouble <u>Compressor governor</u>	Miles Since Last Insp. <u>700</u> Miles Since Last Replacement <u>96000</u>
Trouble Found: <u>Locknut on compressor governor found loose</u>	
Repairs Made: <u>Adjusted governor and checked operation O.K.</u>	
Okayed for Service <u>10:40 P.M. 2/23/1951</u> By <u>Ed. Smith</u> By <u>C. A. S.</u>	

An equipment failure and trouble report

that has not received proper consideration. This negligence has been caused by the inconvenience and lack of appreciation for its importance.

Probably one of the easiest ways to measure this element on diesel-electric and steam locomotives would be to measure the fuel burned. In the case of electric locomotives, a measure of current consumed would be the best method. Recording watt-hour meters have been installed on each car unit by some transit companies as a way of measuring current used. Similar meters could be used on diesel-electric and electric locomotives for the same purpose. However, on a locomotive using liquid fuel, a recording flow-meter registering gallons of fuel would probably be a more practical measurement. The ideal measuring unit for equipment performance would be one that included all three elements—time elapsed, miles operated, and total horsepower delivered.

A preventive maintenance program must also measure effectiveness and correlate results accomplished with the



A composite record of a diesel unit as it is kept in the file. Right—A form for consolidated overhaul data

Over Haul Data								In Date	2-21-50	Out Date	3-2-50																			
Mileage 197,486																														
Unit No.	4026	G.O.																												
Eng Comp	Heads	Pistons	Liners	Main Brgs	Rod Brgs	Manifold	Turbo	Gov	Injectors	Water Pmp	Oil	Vis																		
Rem.	90569	Removed for reconditioning																												
Repl.	90801	5.4	New	New	XXX	XXX	CI	146904	3634	Roach	29334	X60Y 50																		
Cleaned																														
Repaired																														
Main Gen	Aux Gen	Aux Gen	Exciter	No.1 Motor	No.2 Motor	No.3 Motor	No.4 Motor	No.1 Bl Mtr	No.2 Bl Mtr																					
Rem.	85820			24091	26667	21361	28209	167513	167002																					
Repl.	85820			31903	31784	30601	32754	171913	101384																					
Cleaned				86901	87224																									
Repaired																														
Truck Comp	No.1 Axle	Wheel	Wheel	No.2 Axle	Wheel	Wheel	No.3 Axle	Wheel	Wheel	No.4 Axle	Wheel	Wheel																		
Rem.	96834	Removed for reconditioning																												
Repl.	99602	571	AB-134	AB-981	534	AB-308	AB-374	476	SR-374	SR-663	593	AB-741 AB-60																		
Cleaned																														
Repaired																														
<i>Bearings installed on OH. Coat No. B-217 to be reported each quarterly inspection</i>																														
Eng. No. 90801 Ser. 76151	OH Date 3-2-50	Location L. Park	Mileage 197,486																											
Unit No. 4026 Type 5W	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	10	20	30	40	50	60	70	80	90	100	10	20	30	40	50	60	70	80

cost involved. Since economy is such an important part of any maintenance program, the same measuring unit should be applied for both equipment performance and maintenance costs. If costs are to be kept on a time, or time and mileage, or a time, mileage and work performed, basis, equipment performance should be measured by the same yardstick. This measuring unit then becomes a common denominator of the maintenance and cost control systems.

A measuring unit to determine the effect of maintenance on equipment performance is not as simple as would appear at a casual glance. One common method is to report the number of detentions or equipment failures in a given time period. The measuring unit should screen out those difficulties experienced in zones where little or no improvement can be made without unreasonable expenditures of money. Those items beyond the control of preventive maintenance or design improvement should also be screened out. Writing a concise and satisfactory definition of an equipment failure that would accomplish these various objectives is not easy. The following definition is one the author has used; while far from perfect, it has been found fairly satisfactory in preventive maintenance programs.

Definition of Equipment Failure

Any device, unit or part that fails or is found to be defective in service, if the failure or defect is such that the item involved could not continue to give safe and satisfactory service, shall be classified as an "Equipment Failure."

Once the measuring elements for a preventive maintenance and cost-accounting system have been established, it is usually desirable to prepare manuals or instruction sheets explaining how they are to be used. Manuals should give enough details of both systems so workmen can use proper judgment in assigning charges and including essential information on equipment performance records. These manuals should be distributed to individual workmen so they can properly allocate their time

and material for accounting purposes. Foremen or clerks may allocate time and material if it is not considered practical to have individual workmen keep their own records. In any event, assigning of charges and the preparation of basic performance reports should be kept as close as possible to the repair area.

A properly planned cost accounting and preventive-maintenance system also records each workman's efficiency at specific jobs. This self-policing feature checks each man's abilities. In some cases, this has been extremely valuable. Such records can be used advantageously in upgrading men and in negotiating work classification with labor organizations.

The kinds of information available through this system are best demonstrated by a composite example taken from a typical operation. The forms used and data obtained are not inclusive or fixed, but were chosen to show principles involved. The example is from my own experience, and while it deals with a local transit system, the principles and potentialities are the same as those possible on a railroad.

Three basic forms are needed for the system:

1. A time card for listing labor expenses
2. A requisition form for listing material charges
3. An equipment failure and trouble report form for recording equipment performance data.

The illustrations show these forms filled out to show typical reports.

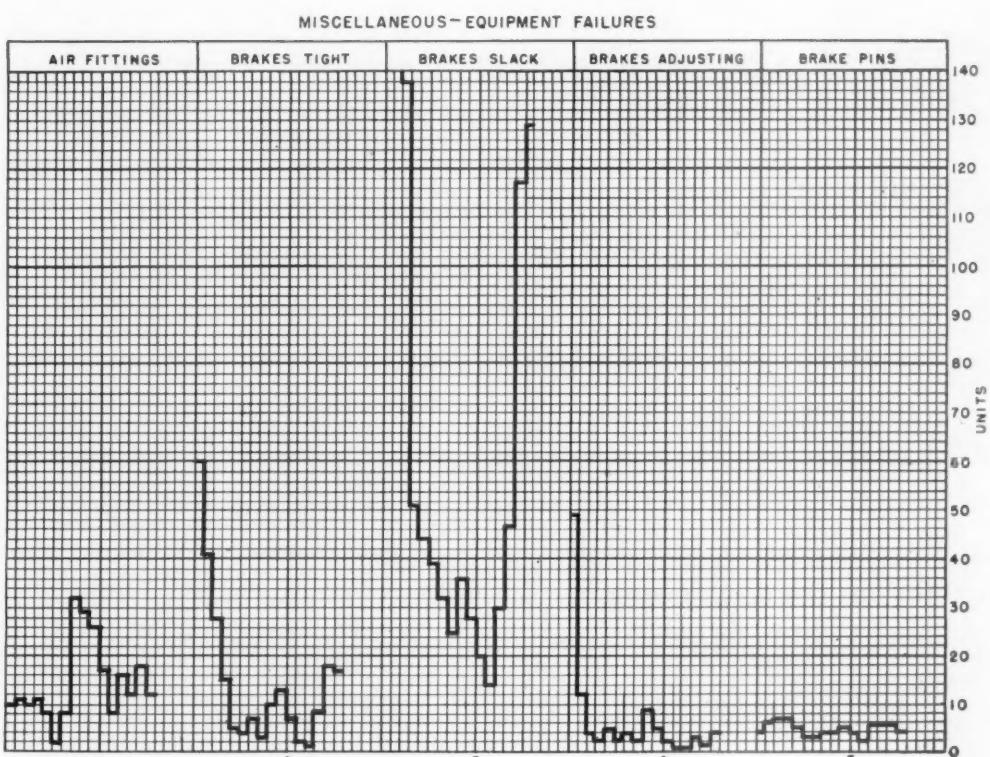
A second set of forms is desirable quickly to consolidate data from the material, trouble report and inspection forms. Visible index types of record-keeping systems are often justified for this purpose because rapid posting and ease of reference are important. Examples of such a system are also illustrated. The running report fits over the composite record in the file, shown in the photograph. By the use of colored signals attached to the visible edge of each index card, it is possible to indicate such factors as tests, next regular inspection and present mileage of the unit involved. The accommodation and distribution of labor and material charges are so well known that this phase will not be discussed. It is presumed these records are set up so that essential cost data is available.

50
VIS
50
Wheel
AB-60
070 8C

The consolidated running report of a single locomotive unit

Date	Running Report	E.F.
1-16-51	Reported for defective gov. cleaned & adj. gov.	ll
1-19-51	Regular monthly inspection	
2-20-51	Reported for low air pressure - no trouble found	
2-22-51	No sand in front box - Refilled & check sanders	
2-23-51	Air compressor cutting out - adjusted gov.	Q

Typical graphs which record miscellaneous equipment failures



Once systematic reporting of equipment troubles has been established, various studies can be made. Data can be gathered to show performance of individual units by road numbers or it can be accumulated under types of equipment or component parts of the locomotive or operating unit. Since repairs or improvements are not made to complete locomotives, but rather to parts, it is usually more informative to keep data by component parts. If it is necessary to know total failures or troubles by operating units, these totals are easily compiled.

Equipment-Failure and Trouble Reports

Proverbs 13-15: "Good understanding giveth favors, but the way of transgressors is hard."

The problems of maintenance crews are multitudinous and understanding is greatly needed. The chronological report of equipment troubles generally presents a snarled and meaningless picture, telling us only that trouble is being experienced. Answers to questions such as cause and nature of the trouble or failure, the devices needing most attention, and what must be done to reduce detentions are not easily derived from such records. In an-

swering these questions, the equipment-failure and trouble report proves its worth.

Once it is known what parts are giving trouble, the nature of the trouble, and the number of troubles or failures, the solutions are generally obvious. Typical graphs of a group of miscellaneous equipment failures are shown in one of the illustrations. The third graph indicates an alarming increase in the number of failure reports. A study of these reports showed, in the majority of cases, that no trouble was found. Since no trouble was found, it might appear that nothing could be gained from studying this record. However, study of detailed reports indicated the fault was not with the equipment but the delays were being caused by inexperienced crews. An education program was inaugurated and, from the records, its expense was more than justified.

One of the first steps in reducing maintenance costs, a universal problem of modern railroads, is the inauguration of a coordinated cost-control and inspection system. The system includes: (1) listing material charges, (2) listing labor expenses, and (3) recording equipment performance data. The cost of the system is incidental to the potential millions of savings each year.

FRISCO

SAFETY SHOW

SHRINE MOSQUE
SPRINGFIELD

7:30 P.M. FRIDAY, MAY 18
FREE

EVERYONE INVITED

BRING YOUR FAMILY, NEIGHBORS AND FRIENDS
VALUABLE ATTENDANCE PRIZES.
SQUARE DANCE - AFTER THE SHOW.
SPLENDID ENTERTAINMENT.

PLAN NOW TO ATTEND

EVERYBODY IN TOWN WAS INVITED

Safety for Everyone On the Frisco

What is probably the best-attended safety rally in the country produced solely by one railroad takes place each year in Springfield, Mo.—nerve-center and shop headquarters of the St. Louis-San Francisco. The latest rally, held on May 18, drew some 2,500 men, women and children to the city's Mosque, despite the competition that evening of a visiting rodeo, senior and junior high school graduations and a show by the Eastern Star. The 1950 rally in Springfield almost taxed the Mosque's 5,000 seating capacity.

While a sizable portion of the audience was made up of Frisco employees and their families, large numbers of non-railroaders responded to the widespread publicity given the open meeting. The local radio station presented a prevue program that morning and Mayor O. L. Barbarick declared the date "Springfield Safety Day."

Presentation of a rally of this sort to the general public carries out the Frisco's theory that safe homes will make safe employees and that a safe community must benefit the railroad not only directly—through diminished accidents at grade crossings and to trespassers—but indirectly through the creation of habitual safe behavior among the population as a whole. The Frisco aims to "get 'em young and make safety fun."

The Appeal Factor

Thus the Springfield rally was a carefully mixed program of "safety gospel" and good entertainment. R. P. Hamilton, superintendent of safety, reported on the safety activities of the railroad during the past 12 months—65 "family" meetings, with an attendance of over 16,000; meetings of Frisco supervisors with 43,000 children in 128 schools; a reduction, in 1950, of 61 per cent in fatalities and 19 per cent in reportable personal injuries, compared with 1949. He said he was "proud to work for a management which believes in safety and does something about it." D. E. Mumford, director of safety of the New York Central system, as guest speaker, addressed himself particularly to the children. He told them how they could "have fun having safety" and reminded their parents that the best way to safety is "through play—not scolding." The mayor made a few remarks. There was a showing of the sound motion picture "And Then There Were Four," produced by the Socony-Vacuum Oil Company as a contribution to safe driving.

Interlaced with these educational items was plenty of entertainment — a good bass singer, a soprano, a piano player, an acrobatic dancer, and a "barber shop" quartet. Presentation of a table full of door prizes ended the formal program, after which the floor was cleared and the audience—many of whom came dressed for the occasion—settled down to hours of square dancing to the calling of a professional and to the tunes of an authentic rustic band.

The Frisco's safety department comprises 11 full-time staff members, including, in addition to Superintendent Hamilton, an assistant superintendent, 3 supervisors, 2 fire prevention agents and 4 clerks and statisticians. A monthly bulletin to supervisory personnel summarizes important accidents and their causes and lists the number of accidents and cost of damage and clearing for each of the road's 7 divisions and 6 terminals. It sets forth also the "honor roll" of superintendents, division engineers and master mechanics who reported a casualty ratio of 5.0 or less per million man-hours to men under their direction during the year to date.

In addition to the "family" meetings already summarized, and periodical meetings of safety committee-men at all division headquarters, Frisco safety activity includes the annual award of the following trophies, on the basis of casualties per million man-hours:

President's—to the best among transportation, mechanical and maintenance-of-way departments as a whole

President's—to the best among the stores, dining car and communications and signal departments as a whole

Vice-President's, Transportation—to the better of the eastern and western districts, respectively

Vice-President's, Maintenance-of-Way—to the better of the eastern and western districts, respectively

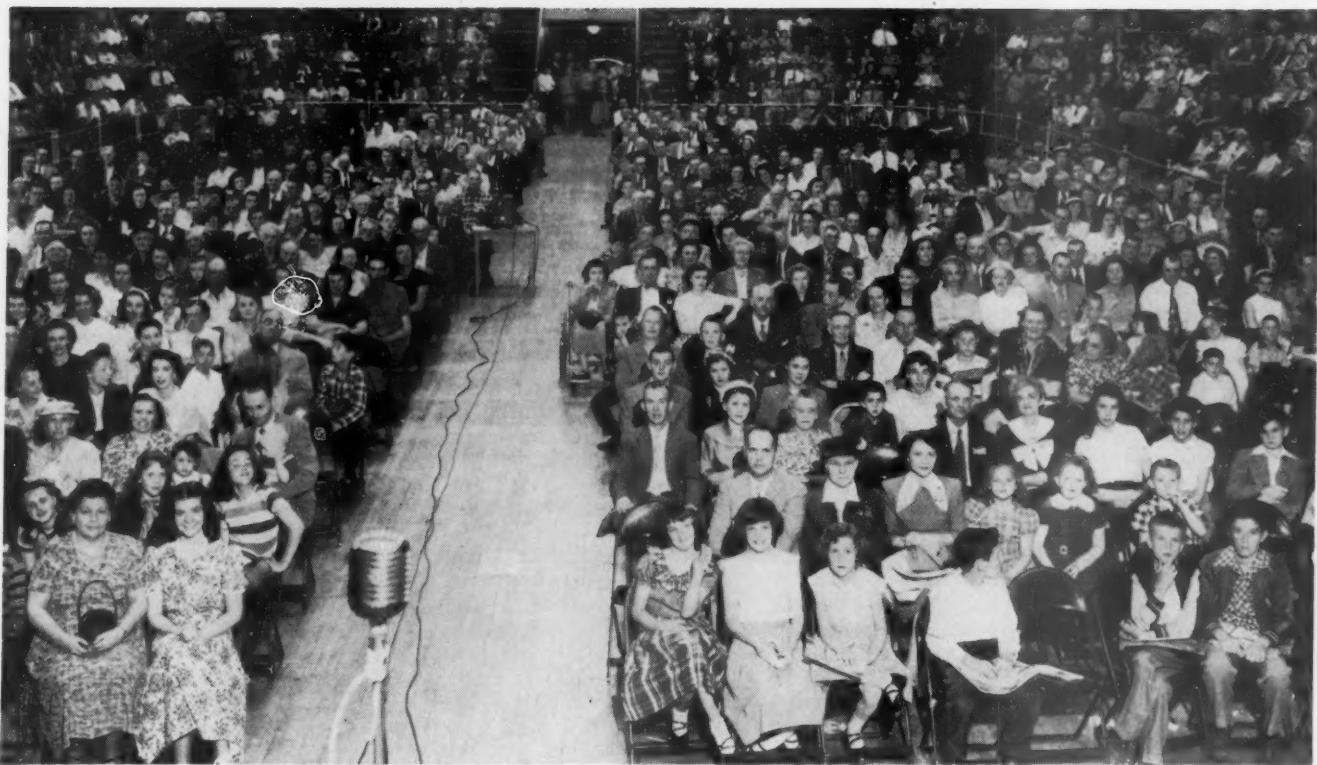
General Manager's, Eastern District—to the best division therein

General Manager's, Western District—to the best division therein

Chief Engineer's, Western District—to the best division therein

Chief Engineer's, Eastern District—to the best division therein

Superintendent Motive Power's—to the best shop or servicing headquarters



THE CAMERA CAUGHT ONLY A PORTION of the 2,500 people who enjoyed the Frisco's big annual safety rally in Springfield, Mo. The hall's capacity of 5,000 made attendance look smaller than it actually was

Springfield rally had . . .



EDUCATION: R. P. Hamilton, superintendent of safety, distributes 100 safety games (developed and furnished by the New York Central) to lucky ticket holders



ENTERTAINMENT: State champion baton wielder and acrobat, Betty Lou Goza, one of five show features topped by an old-fashioned square dance for everybody



PRIZES: Master of Ceremonies H. A. Baker, traffic manager of the road at Springfield, awards a bicycle to one of two lucky children who won them

GENERAL NEWS

Roads Propose Increased Round-Trip Fares In East

Thirty-two Eastern railroads have been authorized by the Interstate Commerce Commission to file tariffs that will have the effect of increasing round-trip passenger fares in Eastern territory.

The roads propose that round-trip coach fares be made subject to a maximum reduction of 15 per cent below double the one-way fare. At present such fares are subject to a 24 per cent maximum reduction.

First-class fares would be made subject to a maximum reduction of 5 per cent as compared with the present maximum of 10 per cent.

The proposed higher fares, which will be subject to protest and possible suspension by the commission, would apply for distances over 225 miles. For distances of 225 miles and under, round-trip fares would remain at double the one-way rate.

Ferrari Leaves D.T.A.

Elmo E. Ferrari has resigned as director of the Defense Transport Administration's Port Utilization Division. The D.T.A. announcement said the position will not be filled at present, but its functions have been taken over by Andrew F. Lane, who will serve as consultant and acting director of the division.

Mr. Ferrari is returning to his position as director of the Port of Stockton, Cal. Mr. Lane, who was formerly general manager of the Boston Port Authority, came to D.T.A. from the Office of Price Stabilization, where he was chief of the Storage & Terminal Facilities Section.

July 18 Passes With No Firemen's Strike Vote

A spokesman for the Brotherhood of Locomotive Firemen & Enginemen said on the afternoon of July 18 that the taking of a strike vote among brotherhood members had not been started up to that time. As reported in *Railway Age* of July 16, page 33, the brotherhood on July 11 announced plans for the taking of a strike vote after July 15.

It was explained at that time that the vote would be taken pursuant to a resolution adopted by the brotherhood's general chairmen. The resolution called for such action unless an "acceptable basis" for settlement of the brotherhood's pending wage and rules dispute were agreed to by railroad management by July 15.

In his July 18 discussion of the matter, which was in response to an inquiry, the brotherhood spokesman

pointed out that the July 11 announcement had said that the vote would be taken "after the 15th"; but that no specific date for distribution of the ballots was mentioned. Plans for the vote had not been dropped, the spokesman emphasized; but he also said that a decision as to when the ballot would actually be spread was on a "day-to-day basis."

Meanwhile, the B. of L. F. & E. has continued to participate in mediation proceedings in Washington under the auspices of the National Mediation Board. Also involved in those proceedings are two other train-service brotherhoods whose wage and rules disputes likewise remain unsettled. The Brotherhood of Locomotive Engineers and Order of Railway Conductors.

Meanwhile, the escalator-clause provisions of the present agreement between the railroads and the Switchmen's Union of North America have been modified to make them the same as those embodied in agreements with the unions representing non-operating employees. The escalator clauses are related to the Consumers' Price Index published by the Bureau of Labor Statistics and they provide for cost-of-living adjustments of one cent per hour for each one-point change in the index from a base figure. The present modification will raise the base figure in the switchmen's agreement from 174 to 178. It involves no wage increase at this time but it puts more of present wages paid S.U.N.A. members into their basic rate.

Alabama Express Rates

The Interstate Commerce Commission has found that unjust discrimination against interstate commerce has resulted from the Alabama Public Service Commission's failure to authorize the Railway Express Agency to increase its Alabama intrastate rates to bases approved by the federal commission for interstate traffic. The I.C.C. issued no order, but its report said one would be forthcoming unless the Alabama commission advised that the increases would be authorized.

The proceeding is docketed as No. 30748. The express-rate increases involved are those approved by the I.C.C. up to March 1, but not those approved on and since that date.

Allocations Contemplate 9,500 Cars per Month

Steel allocations in the current quarter "should be sufficient for construction in the fourth quarter of about 26,000 freight cars and 2,500 tank cars," the National Production Authority has announced. The third-quarter allocations total 597,000 tons of carbon steel, including 70,000 tons for the tank cars.

A fourth-quarter production of 28,500 cars, which N.P.A. thinks it has provided for, would be a 9,500-car monthly program. The N.P.A. an-

"THE FOUR PILLARS OF FREEDOM"

"Work, Save, Vote and Pray" are "The Four Pillars of Freedom," according to W. G. Vollmer, president of the Texas & Pacific—who has expressed in a recently published 12-page folder his conviction that "the virtues inherent in these words would serve to strengthen America spiritually, morally and economically."

The article by Mr. Vollmer is offered free to anyone who desires a copy; with copies being mailed out at the rate of about 1,000 a day, distribution to individuals, clubs and business organizations throughout the country is expected to total about 175,000 copies by the end of July.

Mr. Vollmer's article is coupled with a series of six T. & P. advertisements on the theme "How You Can Make America Strong," inaugurated in May, which will appear over a period of 12 months in 120 on-line newspapers and a select group of off-line papers.

nouncement quoted "N.P.A. officials" as having said that this would be "as close to the proposed production of 10,000 cars a month as the short steel situation will permit."

The announcement also gave the monthly car-production figures for this year's first six months, the May and June totals having been 9,774 and 9,644 cars, respectively. The third-quarter allocations are expected to permit maintenance of this "near-10,000 per month level," N.P.A. said again.

The announcement had previously stated that freight car building "takes large quantities of wide steel plate, which is in very short supply." It was explained further that "steel bars and alloy steel are also extensively used and are also in very short supply." The announcement then added: "Since substitutions are in most cases impossible, production of freight cars will continue to be geared to available supplies of steel."

Meanwhile, as the announcement put it, "N.P.A. emphasized" that "production of freight cars is recognized as an important program"; and, "in addition to set-asides for steel, some producers are receiving spot assistance from N.P.A. to assure an orderly flow of production."

Gross Revenue in June 8.3% Above Last Year

From preliminary reports of 80 Class I railroads, representing 81 per cent of total operating revenues, the Association of American Railroads has estimated that June gross amounted to \$683,527,152, an increase of 8.3 per cent above the \$631,230,879 reported for the same 1950 month. Estimated June freight revenue was \$567,896,064,



FIRE fighting equipment must be in readiness for emergency service at all times.

Likewise steam locomotives should be maintained to meet emergency service ...they will certainly be called on.

Anticipate such demands by providing the necessary replacement stock of vital parts that will be needed to recondition and to maintain them.

Check your reserve stock of parts for SUPERHEATERS, FEEDWATER HEATERS,

EXHAUST STEAM INJECTORS, STEAM DRIERS, THROTTLES AND HEADER CASTINGS.

With material shortages and increased demands on our facilities, delivery schedules are lengthening. Act now... it is later than you think.

THE
SUPERHEATER CO., Inc.
 DIVISION OF
COMBUSTION ENGINEERING-SUPERHEATER, INC.

200 Madison Ave., NEW YORK 16
 Bankers Building, CHICAGO 3
 Montreal, Canada, THE SUPERHEATER COMPANY, Ltd.
 Representing AMERICAN THROTTLE COMPANY, INC.

Superheaters • Pyrometers • Injectors • Steam Driers • Feedwater Heaters • Steam Generators • Oil Separators • Welded Boiler Shells • Throttles



New York Daily Mirror — International News

IT TOOK FAST WORK by Pennsylvania supervisory forces and track maintenance crews to restore traffic over the railroad's Hackensack River drawbridge only a few hours after the outbreak of this fire on July 11. Between New York and Newark, N. J., and described

as "the busiest two-track railroad bridge in the world," it is used by all P.R.R. passenger trains between New York and the South and West. Because it is nearly all steel, fire damage was largely confined to ties and draw controls (*Railway Age*, July 16)

as compared with June 1950's \$524,793,648, an increase of 8.2 per cent. Estimated passenger revenue was \$64,778,992, as compared with \$59,858,023, an increase of 8.2 per cent. All other revenue was up 9.2 per cent—\$50,852,096 as compared with \$46,579,208.

House Study of Rail Pension Plan Proposed

Representative Bender, Republican of Ohio, has introduced House Resolution 329 to authorize the House Committee on Interstate and Foreign Commerce to investigate "the old-age retirement and survivors benefits provided under the Railroad Retirement Act." The committee now has under consideration various bills proposing to liberalize those benefits.

More Railroads Receive Amortization Certificates

Certificates of necessity authorizing accelerated amortization of facilities for tax purposes have recently been awarded to 15 railroads and two refrigerator car lines. The certificates were issued by the Defense Production Administration, upon recommendation by the Defense Transport Administration.

Railroads receiving certificates, together with amounts to be involved, are listed below. The percentage figures show in each case the proportions that can be written off in five years.

Aberdeen & Rockfish, \$160,816, 65 per cent.

Atlantic Coast Line, \$11,976,200, 80 per cent.

Charleston & Western Carolina, \$880,000, 80 per cent.

Central of Georgia, \$2,746,913, 80 per cent.

Chesapeake & Ohio, \$1,400,000, 80 per cent.

Chicago, Burlington & Quincy, \$8,332,000, 65 per cent; and \$12,156,112, 80 per cent.

Chicago & Eastern Illinois, \$10,440,700, 80 per cent.

Chicago Heights Terminal Transfer, \$1,000,000, 80 per cent.

Fruit Growers Express, \$2,877,951, 80 per cent.

Lehigh Valley, \$2,863,247, 80 per cent.

Litchfield & Madison, \$530,000, 80 per cent; and \$134,000, 65 per cent.

Missouri-Illinois, \$1,406,400, 80 per cent.

Norfolk Southern, \$850,000, 80 per cent.

Pacific Fruit Express, \$18,634,960, 80 per cent.

Pennsylvania, \$51,936,200, 65 per cent.

Spokane International, \$406,568, 80 per cent.

Union Pacific, \$44,482,500, 80 per cent.

West-South Rates Will Link Savannah to Charleston

The Interstate Commerce Commission has modified its 1938 decision on West-South class rates to permit transfer of Savannah, Ga., and contiguous points to the Charleston, S. C., group. The transfer was sought by interested railroads.

The proceeding involved is No. 26510, wherein the commission's original report prescribed maximum reasonable class rates between points in Western Trunk Line territory and southern Missouri, on the one hand,

and points in Southern territory, on the other.

Savannah was set up as one of the "key points" in the adjustment plan, but its rate basis was made the same as that of the Jacksonville, Fla., group. The commission's approval of the transfer to the Charleston group was embodied in a July 3 report on further hearing in the case.

Stamp Would Honor Stourbridge Lion's Trial

Representative Gillette, Republican of Pennsylvania, has introduced H.J. Res. 287 to authorize issuance of a "special series of stamps commemorating the first trial run of a steam locomotive, the Stourbridge Lion, in the Western Hemisphere on August 8, 1829, at Honesdale, Pa."

New Auto Rates Become Effective September 4

The Interstate Commerce Commission has now set September 4 as the effective date of its outstanding order requiring an adjustment of railroad freight rates on new automobiles. The order involved was issued in the No. 29820 proceeding, and it was originally scheduled to become effective February 21.

It requires an adjustment which will have the effect of narrowing the spread between the rate basis applicable on shipments from factories in Detroit, South Bend, Ind., Toledo, Ohio, Kenosha, Wis., and Evansville, Ind., and that applicable on shipments from regional assembly plants of the General Motors Corporation and the Ford Motor Company. (*Railway Age*, November 25, 1950, page 52.)

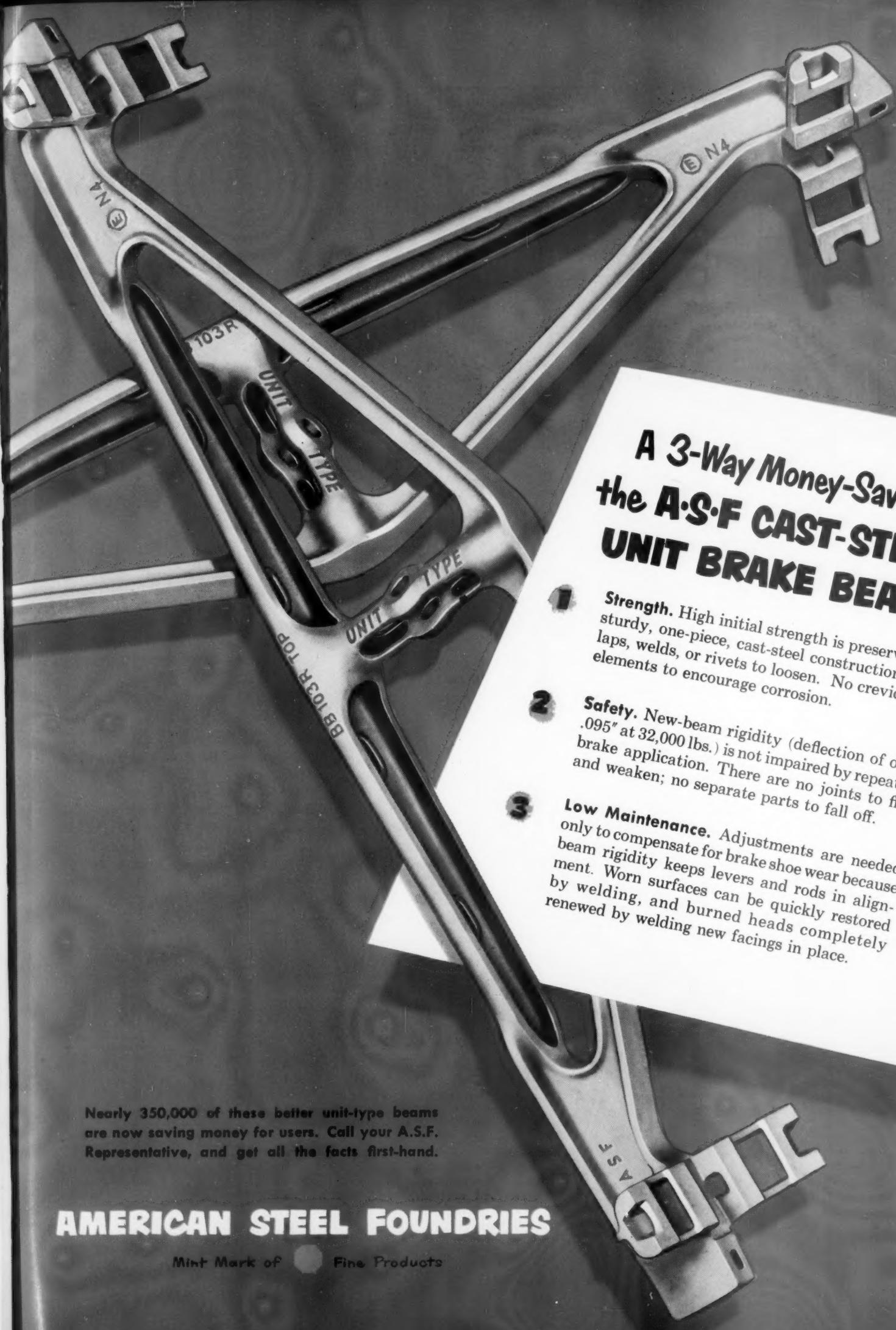
The order setting the September 4 effective date also made some corrections in the original order. At the same time it denied railroad petitions for reopening and reconsideration of the case.

D.T.A.'s Railroad Advisory Group Holds First Meeting

The Defense Transport Administration's Railroad Advisory Committee held its first meeting in Washington, D. C., on July 11.

Reporting on the session, a D.T.A. statement quoted George H. Minchin, director of the agency's Railroad Transport Division, as having said that "many valuable recommendations were suggested by members of the committee in connection with the D.T.A. rail program." The statement went on to say that subjects discussed at the meeting included heavier freight car loading, demurrage, terminal and other delays, freight car distribution, per diem, l.c.l. operations, and the "clean car problem."

Members of the committee include these eight railroad officers: H. A. (Continued on page 59)



A 3-Way Money-Saver the **A.S.F. CAST-STEEL** **UNIT BRAKE BEAM**

- 1 **Strength.** High initial strength is preserved by sturdy, one-piece, cast-steel construction. No laps, welds, or rivets to loosen. No crevices or elements to encourage corrosion.
- 2 **Safety.** New-beam rigidity (deflection of only .095" at 32,000 lbs.) is not impaired by repeated brake application. There are no joints to flex and weaken; no separate parts to fall off.
- 3 **Low Maintenance.** Adjustments are needed only to compensate for brake shoe wear because beam rigidity keeps levers and rods in alignment. Worn surfaces can be quickly restored by welding, and burned heads completely renewed by welding new facings in place.

Nearly 350,000 of these better unit-type beams are now saving money for users. Call your A.S.F. Representative, and get all the facts first-hand.

AMERICAN STEEL FOUNDRIES

Mint Mark of  Fine Products

WHY
DON'T

THEY

...?



In the early nineteen-thirties, as a Johnny-come-lately in the field of building railway passenger cars, The Budd Company surveyed current practice with the respect such an old and honored occupation deserved, but with something less than awe.

Experience in other endeavors had revealed the insidious ability of habit or tradition to impede progress. And

there was—and is—a streak of curiosity in The Budd Company as impelling as a chestnut burr under a saddle. It's summed up in the question: "Why don't they . . . ?"

"Why don't they make a railway passenger car as comfortable and inviting as a person's living room?" We could find no valid reason why they didn't, and plenty of ways to do it.





You may remember that the Pioneer Zephyr, first lightweight streamliner, offered day-coach passengers lounge-type seats, tasteful tapestry upholstery, air-conditioning, effective but easy-on-the-eyes lighting . . . and attracted passengers in droves. Still is doing it.

"Why don't they . . . ?" has led Budd to develop research, testing and manufacturing facilities and personnel unparalleled in the field of railway passenger car building. Their accomplishments have raised to higher levels the techniques of the entire industry.

The Budd Company
Philadelphia, Detroit, Gary

BUD
BUD

PIONEERS IN BETTER TRANSPORTATION



**HIS JOB: TO KEEP CARS
HUMPING**

**OUR JOB: TO PROVIDE
PROTECTION FOR
CARS and LADING**

**Never in the history of railroading has
cushioning of freight cars been more important**

Steel cars, heavy cars, heavy loads, high speeds and hump yard classification, find old-fashioned draft rigging totally inadequate for today's needs.

The modern cushioning device, proven nevertheless by years of service, is WAUGHMAT TWIN CUSHIONS. TWIN CUSHIONS provide complete protection against the great majority of classification yard impacts. Specify TWIN CUSHIONS today for new cars or draft gear replacement on existing cars.

WAUGH EQUIPMENT COMPANY
420 LEXINGTON AVENUE • NEW YORK 17, N.Y.
CHICAGO • ST. LOUIS



WAUGHMAT
TwinCushions

(Continued from page 54)
 DeButts, vice-president, Southern; S. L. Fee, vice-president, Chicago, Burlington & Quincy; H. E. Jones, president, Campbell's Creek; W. W. Judson, vice-president, Northern Pacific; P. J. Lynch, vice-president, Union Pacific; T. G. Sughrue, executive vice-president, Boston & Maine; J. M. Symes, vice-president, Pennsylvania; and H. W. Ward, president, Illinois Terminal.

All members were present at the July 11 meeting except Messrs. DeButts, Fee and Jones. They were represented, in turn, by R. K. McClain, assistant vice-president, Southern; W. B. Simmons, general superintendent of transportation, Burlington; and A. T. Lowmaster, retired executive vice-president, Chesapeake & Ohio.

Supplement to Freight Commodity Classification

Supplement No. 7 to the A.A.R. Freight Commodity Classification, 1947 Edition, has been issued by the Accounting Division of the Association of American Railroads and sent to purchasers of the classification. An accompanying notice by Division Secre-

MONON REFINES "ART" OF TRAIN CALLING

Passengers in Chicago's Dearborn station are startled—most of them, it seems, pleasantly so—three times each day, when the public address system announces pending departure of Chicago, Indianapolis & Louisville trains. Not one, not two—but a chorus of voices sing out that:

"Up and down the Monon
 Everything is fine
 'Cause the rootin' tootin' Monon
 She's a Hoosier line . . ."

Following this "overture," a trained announcer describes station stops for the departing train and then the chorus returns briefly to sing once again about "the Hoosier line."

All this so intrigued radio entertainer Arthur Godfrey that he recently featured the Monon's song on one of his television programs, supplementing the song with some friendly comments about the railroad and its operation. The Chicago Daily Tribune was also intrigued, and even the New York Times made note of the idea. Only the Philadelphia Evening Bulletin took a dim view.

The idea of musical train announcements was conceived by the Monon's traffic vice-president, Warren Brown. Using music originally written for the Monon's centennial film in 1947, Mr. Brown had three separate recordings made (one for each train) with music and announcement of station stops all "built in." All the regular train announcer has left to do is to mention the track number.

tary E. R. Ford explained that the supplement became effective July 1, superseding previous supplements and containing all changes up to that date. It was prepared by the A.A.R. Freight Traffic Statistics Committee.

May Accident Statistics

The Interstate Commerce Commission has made public its Bureau of Transport Economics and Statistics preliminary summary of steam railway accidents for May and this year's first five months. The compilation, which is subject to revision, follows:

Item	Month of		5 months ended		
	May	1951	1950	1951	1950
Number of train accidents*	835	750	4,633	3,720	
Number of accidents resulting in casualties	36	40	235	191	
Number of casualties in train, train-service and nontrain accidents:					
Trespassers:					
Killed	122	105	387	378	
Injured	83	115	359	419	
Passengers on trains:					
(a) In train accidents:					
Killed	7	31	92	30	
Injured	64	31	840	519	
(b) In train-service accidents:					
Killed	2	5	8		
Injured	136	158	668	789	
Travelers not on trains:					
Killed	1	2	3		
Injured	59	77	308	349	
Employees on duty:					
Killed	25	25	155	121	
Injured	1,722	1,594	9,578	7,898	
All other nontrespassers:**					
Killed	101	117	694	667	
Injured	408	377	2,630	2,380	
Total—All classes of persons:					
Killed	256	249	1,335	1,207	
Injured	2,472	2,352	14,383	12,354	

*Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former caused damage of \$275 or more to railway property in 1950. Beginning January 1, 1951, this minimum was raised at \$300. Only a minor part of the total accidents result in casualties to persons as noted above.

**Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties for all classes of persons, including both trespassers and nontrespassers, were as follows:

Persons:				
Killed	95	104	655	618
Injured	272	255	1,833	1,715

I.C.C. Won't Modify Signal Order for C. & O., C. of Ga.

Chesapeake & Ohio and Central of Georgia petitions for partial relief from requirements of the Interstate Commerce Commission's signaling order of June 17, 1947, have been denied by the commission. The denials were embodied in supplementary reports, by Commissioner Patterson, in the general proceeding—No. 29543.

The June 17, 1947, order requires installation of an automatic block signal system on lines over which any passenger train is operated at 60 or more m.p.h. or any freight train is operated at 50 or more m.p.h.; and installation of an automatic train-control or cab-signal system on lines over which any train is operated at 80 or more m.p.h.

The C. & O. sought modification of the order so as to permit it to operate

CAR SURPLUSES, SHORTAGES

Average daily freight car surpluses and shortages for the week ended July 14 were announced by the Association of American Railroads on July 19 as follows:

	Surplus	Shortage
Plain Box	17,010	1,341
Auto Box	95	45
Total Box	17,105	1,386
Gondola	47	2,342
Hopper	29,493	742
Covered Hopper	0	71
Stock	1,520	38
Flat	65	765
Refrigerator	1,344	0
Other	236	5
Total	49,810	5,349

passenger trains at speeds up to 85 m.p.h. under an automatic block-signal system between Old Point Junction, Va., and Richmond, 70.6 miles; and between Russell, Ky., and C. S. Cabin, 126.6 miles. The C. of Ga. sought relief with respect to its 182-mile line between Central Junction, Ga., and Ames, where it sought to operate the streamliner, "Nancy Hanks II," at 70 m.p.h., other passenger trains at 60 m.p.h. and freight trains at 50 m.p.h.

Bills in Congress

Another bill "to assure allocations for freight cars and locomotives" has been introduced in Congress. It is H. R. 4572, sponsored by Representative Horan, Republican of Washington.

Other recently-introduced bills include:

H. R. 4641 and H. R. 4732, to liberalize benefit provisions of the Railroad Retirement Act.

PRIORITIES ASSURED TO REPAIR FLOOD DAMAGE

In Washington, D. C., on July 19 the National Production Authority moved to help restore transportation facilities in the Kansas-Missouri flood area. Priority assistance was assured for railroads with washed out bridges, and Robert L. Glenn, chief of N.P.A.'s Railroad Equipment Division, said "all the help possible" will be given to roads hit by the flood. Material for one Chicago, Rock Island & Pacific bridge had already been cleared by N.P.A., and action was expected shortly on five others on the Atchison, Topeka & Santa Fe.

N.P.A. was planning to establish an office at Kansas City to handle materials problems. F. H. Wingate, chief of the "M.R.O." section of the Railroad Equipment Division was scheduled to join that office to handle railroad priorities.

ment Act. The sponsors, respectively, are Representative Priest, Democrat of Tennessee, and Representative Martin, Republican of Iowa.

S. 1732 and S. 1736 propose to "prohibit discrimination in employment because of race . . ."; and to provide "relief against certain forms of discrimination in interstate transportation." Both were introduced by Senator Humphrey, Democrat of Minnesota, for himself and a group of eight other senators.

Waybill Study

Another waybill study has been issued by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. It is Statement No. 5130, Quarterly Seasonal Comparisons—Carloads, Tons per Car, Length of Haul (Short Line), and Revenue per Hundredweight by Commodity Classes (Terminations in 1947, 1948, 1949 and 1950).

OVERSEAS

Australian Electrification To Use Pumpless Rectifiers

By Charles Lynch

The Gippsland railway line in the Australian state of Victoria, which is to be electrified in 1953, will use 1,500-volt d.c. power supplied by pumpless, steel tank, mercury-arc rectifiers.

The line is to be electrified from Melbourne to Traralgon, 97 miles, but it is expected that trains will run from Melbourne to Warragul, 65 miles, several months before completion of the whole section.

Electrical energy will be supplied by the State Electricity Commission. There will be 16 traction substations, (six double-unit and 10 single-unit) where 22-kv, three-phase, 50-cycle power will be converted to direct current at 1,500 volts. This will be fed to the overhead contact wire system via high-speed circuit breakers.

The 1,500-volt overhead contact wire system will be sectionalized at substations, and in some cases at intermediate points between substations where tie-stations will be installed. It is planned to have 12 tie-stations, in which high-speed circuit breakers of the same type as used in the substations will be provided.

All substations and tie-stations will be unattended, and equipment in them will be automatic. The equipment will be under control and supervision of a power operations engineer located in a central depot to be erected at Warragul. Each substation and tie-station will be connected to the power operations room by two telephone wires through which supervisory equipment will be operated.

In the power operations room, there will be a control desk and control diagram. Small red and green lamps

in the diagram will indicate the condition of all rectifiers and circuit breakers to be controlled or supervised. Keys on the control desk will enable the power operations engineer to open or close any of the circuit breakers or rectifiers on the system.

Initially, the power operations engineer will have control of 22 rectifiers, 71 high-speed circuit breakers and 22 high tension feeder oil-circuit breakers.

Telephone facilities will also be provided between the power operations room and all substations and tie-stations.

SUPPLY TRADE

Fairbanks-Morse to Build New Plant at Kansas City

Construction of a new plant near Kansas City, Mo., has been announced by Robert H. Morse, Jr., president of Fairbanks, Morse & Co. Originally the plant was to have been built as a scale plant, but 500,000 sq. ft. of additional floor space will now be provided to include a foundry and facilities for manufacture of engines and pumps. The new plant will be a one-story brick and reinforced concrete structure; with all machinery and equipment installed, it will represent an investment of \$7.5 million and provide employment for nearly 1,000 persons.

Mr. Morse also announced that scale manufacturing operations of the company, now at St. Johnsbury, Vt., and Moline, Ill., will be expanded.

A.C.F. Net Totaled \$2,675,914 in Fiscal Year

Net profit of the American Car & Foundry Co. for the fiscal year ended April 30, 1951, totaled \$2,675,914, equal, after preferred dividends, to \$1.08 a common share, according to the recently released annual report. In the previous fiscal year, net income was \$436,193. Consolidated net sales for the latest fiscal year were \$119,657,304, compared with \$147,470,154 for the year ended April 30, 1950.

"We enter the new year with a substantial backlog totaling approximately \$340,000,000 on June 1," John E. Rovensky, chairman, said in the report. "Included in this figure are orders for approximately \$170,000,000 in railroad equipment—the balance being war orders, carburetors and miscellaneous business." Mr. Rovensky added that present plans call for increasing the car fleet of the subsidiary Shippers' Car Line Corporation by about 1,000 units during the present fiscal year.

William M. Hawkins, formerly laboratory director for the American



Bernard R. Brown, who has been appointed assistant chief engineer of the Southern Wheel division of the American Brake Shoe Company. Mr. Brown has been sales engineer in the New York office since 1940

Car & Foundry Co., at Berwick, Pa., has been appointed senior research engineer at New York, in the research and development department.

Paul M. Fischer, formerly factory manager of the Hyster Company, at Peoria, Ill., has been promoted to chief methods engineer at Portland, Ore.

The Oliver Iron & Steel Corp., Pittsburgh, has acquired all assets, patents and property of Berry Motors, Inc., Corinth, Miss., which will be operated as the Berry division of Oliver Iron & Steel. Frank Berry has been appointed director of research of the division; Ara A. Cambere, formerly president of Berry Motors, has been elected a vice-president of the Oliver corporation, in charge of the new division; and John R. Carlson who has been directing sales for Berry Motors, will continue in a similar capacity in the new division.

V. C. Armstrong, chairman of the Rail Joint Company, has retired. His former position has been abolished. E. A. Condit has been elected president and chief executive officer of Rail Joint, and also a vice-president of Poor & Co.

The Electro-Motive Division of General Motors Corporation has announced the following changes in sales, service and parts personnel: C. L. Moss, sales representative at Washington, D. C., as district sales manager at New York; James B. Swindell, sales representative at Chicago, as district sales manager there; Warren A. Thomas, manager of statistics and market analysis section in the sales department, as sales manager, LaGrange factory branch; Harold P. Gustafson, sales engineer at LaGrange, as sales representative at New York; Donald S. Fricke, district engineer, New York region, as sales rep-

representative at Washington; **Floyd E. von Ohlen**, sales engineer at LaGrange, as sales representative, Chicago region; **Norbert A. Minor**, parts representative, Chicago region, as Chicago sales representative; **Charles F. Lincoln, Jr.**, manager of the production application section of the sales department, as assistant general parts manager; **Kenneth J. Wolf**, of the product application section, as Mr. Lincoln's successor; and **John F. Greenip**, service engineer at St. Louis, as parts representative for that region.

The merger of the **Westinghouse Air Brake Company** and its two subsidiaries, the **Union Switch & Signal Co.**, Swissvale, Pa., and the **Westinghouse Pacific Coast Air Brake Company**, Emeryville, Cal., has been approved by stockholders. (*Railway Age*, June 4, page 84.)

J. T. Llewellyn, II, and **L. J. Wise** have been elected, respectively, president and vice-president of the **Allied Steel Castings Company**, Chicago, and **L. F. Hartwig** will assume the title of assistant to the president. Mr. Hartwig also has been elected vice-president—manufacturing of the **Chicago Malleable Castings Company**.

OBITUARY

Harry S. C. Folk, formerly eastern railroad sales manager for the Automatic Transportation Company, died on July 18.

Carl W. Benz, executive vice-president of the International Railway Car & Equipment Manufacturing Co., died on July 15, after a brief illness.

Herbert J. Cornell, 61, vice-president of the Dearborn Chemical Company, eastern division, of New York, died on July 13, in the White Plains, N. Y., Hospital.

EQUIPMENT AND SUPPLIES

FREIGHT CARS

The **Atchison, Topeka & Santa Fe** has ordered 200 70-ton tank cars for use in general petroleum traffic and for transporting chemicals.

The **Chicago & North Western** has ordered 250 70-ton covered hopper cars from the Pullman-Standard Car Manufacturing Company at a cost of about \$1.75 million. Delivery is scheduled for the second quarter of 1952.

The **Chicago, Indianapolis &**

Louisville has ordered 250 50-ton PS-1 box cars from the Pullman-Standard Car Manufacturing Company at an approximate cost of \$1,400,000. Delivery is scheduled for the third quarter of 1952.

The **Delaware, Lackawanna & Western** has ordered 100 70-ton covered hopper cars from the American Car & Foundry Co.

The **Grand Trunk Western** has ordered 250 40-foot box cars from the American Car & Foundry Co. and 250 70-ton triple hopper cars from the General American Transportation Corporation.

The **Union Pacific** has ordered 100 steel caboose cars from its Omaha, Neb., shops, at an estimated cost of \$1,520,000. Delivery is expected in February 1952.

PASSENGER CARS

The **Grand Trunk Western** has purchased six lightweight streamline coaches from the Chesapeake & Ohio.

SIGNALING

The **Southern Pacific** has ordered from the Union Switch & Signal Division of the Westinghouse Air Brake

Your maintenance forces can apply this tough Mule-Hide

COLD PROCESS built-up roof

Application cost is low because your own maintenance crew can do the work without special tools.

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Company materials to extend facilities in the Alhambra, Cal.-Colton C. T. C. territory. The order includes materials for additions to the existing control machine, and also code equipment, styles H-2 high and dwarf searchlight signals, M-23A dual-control electric switch machines, relays, rectifiers, transformers and housings. Field installation will be handled by railroad forces.

IRON & STEEL

The **Columbus & Greenville** has purchased 4½ miles of new 80-lb. rail and is currently laying it as replacement for worn 60-lb. rail.

CAR SERVICE

I. C. C. Service Order No. 879, effective from June 29 through July 28 unless otherwise modified, requires railroads serving Arizona and California to furnish and transport so-called giant refrigerator cars at freight rates applicable on the same commodities loaded in standard reefers. The order is similar to former Service Order No. 853, which expired July 15, 1950.

I. C. C. Service Orders Nos. 870 and 871, which restrict free time on cars loaded at ports, have been modified by amendments (No. 2 in each case) which set back the expiration dates from July 15 until October 31.

The Defense Transportation Administration has called attention to the fact that I. C. C. Service Order No. 878 would become effective, as scheduled, at 12:01 a.m. July 16. The order requires "heavy" loading of canned goods (*Railway Age*, June 18, page 65, and June 25, page 96). The impact of the order has been modified by various general and special permits issued by the commission, the D. T. A. statement pointed out.

ORGANIZATIONS

"19 Order" Is Invitation To Superintendents

A unique invitation—in the form of a "19 order," together with the necessary clearance form A—has been sent to all members of the American Association of Railroad Superintendents by President Fred L. Houx, for the annual West Coast post-convention meeting to be held in Portland, Ore., on August 16 and 17.

The principal speaker at the luncheon will be J. W. Corbett, vice-

president in charge of operations for the Southern Pacific. The "charge to the superintendents" will be given by I. E. Manion, general manager, Lines West, of the Great Northern.

Round table discussions will be held on four of the general committee reports rendered at the annual June convention of the association in Chicago: "Superintendent's Responsibility for Shipper Relations," conducted by L. P. Hopkins, superintendent, S.P.; "Superintendent's Responsibility for Efficient Car Handling," conducted by H. H. Keck, supervisor of car service, Spokane, Portland & Seattle; "Loss and Damage Prevention," conducted by J. F. Alsip, general manager, Lines West, Northern Pacific; and "Education of Supervisors and Maintenance of Employee Morale," conducted by Elgin Hicks, general superintendent, Union Pacific.

ized F.E.C. in the hands of the St. Joe company. The paper company together with the Alfred I. duPont Testamentary Estate, owns \$25,000,000 of the \$45,000,000 of F.E.C. outstanding first and refunding mortgage bonds.

The commission's new plan of reorganization was approved by a 7-3 vote. Commissioner Mahaffie dissented, as he did in 1948, and was joined by Chairman Splawn and Commissioner Lee. Commissioner Mitchell did not participate.

Commissioner Mahaffie's dissent said persuasive evidence presented in the case indicated that public interest would best be served by approval of a reorganization plan providing for an "internal reorganization" of the F.E.C.—"substantially the plan presented by the St. Joe company." He said he did not believe the new plan met the legal requirements of the Bankruptcy Act, and added that approval of such a plan by the commission may "unnecessarily postpone" the final termination of this already protracted proceeding.

The new plan provides that cash and securities of the A.C.L. shall be allocated to creditors of the F.E.C. in exchange for their claims. Present stockholders of the F.E.C. would be wiped out. Holders of F.E.C. first mortgage bonds would be paid off in full in cash. The first and refunding mortgage bondholders of the F.E.C. would receive for each \$1,000 bond a minimum of \$84.69 in cash, plus new A.C.L. bonds and stock.

The A.C.L. would provide the authorized \$46,500,000 capitalization of the reorganized property as follows: Cash, \$4,000,000; A.C.L. divisional first mortgage 25-year bonds, at 3½ per cent fixed interest, \$14,000,000; A.C.L. general income divisional mortgage, 4½ per cent, 75-year bonds, \$13,500,000; new A.C.L. participating cumulative convertible \$100 par value preferred stock, \$4 dividend, \$9,000,000; and A.C.L. no-par common stock, \$6,000,000.

Among other provisions of the latest plan is one modifying the employee-protection arrangement to provide that the four-year period of protection shall commence "upon the date of transfer of the debtor's properties to the Atlantic Coast Line."

New York, Susquehanna & Western. — *Reorganization.* — The I.C.C.'s modified plan for recapitalizing this road (*Railway Age*, March 26, page 70), has been approved by Federal Judge W. F. Smith at Newark, N. J. The plan will become effective after approval by bondholders and unsecured creditors in voting to be supervised by the commission. Judge Smith said no date has been set for voting.

Northern Pacific Terminal Company of Oregon. — *Operation.* — An application to amend the contract cov-

FINANCIAL

Chicago & North Western-Chicago, St. Paul, Minneapolis & Omaha. — *Trackage Rights.* — These roads have filed a joint application with the I.C.C., seeking authority for the former to operate its "Dakota 400" passenger trains over the latter's line between Wyeville, Wis., and Elroy, 22.7 miles. The C&N.W. controls the C.St.P.M.&O. through ownership of capital stock. Operation of the "Dakota 400" over the Wyeville-Elroy segment began April 30 on a temporary basis, and the roads say public response has been such as to warrant permanent service over the line. The C&N.W. will pay \$30.82 for each train moved over the segment.

Florida East Coast. — *Reorganization.* — In its fifth supplemental report in this case, the I.C.C. has issued a modified plan of reorganization for this road. This new plan again provides that the F.E.C. shall be merged or consolidated with the Atlantic Coast Line, and it raises the maximum permissible capitalization from \$40,500,000 to \$46,500,000, exclusive of equipment obligations. The former reorganization plan, approved by the I.C.C. in 1948, was thrown out by the U.S. District Court for the Southern District of Florida in a decision which the U.S. Supreme Court subsequently refused to review. (*Railway Age*, April 8, 1950, page 55.) This previous plan had also contemplated a merger or consolidation of the F.E.C. with A.C.L. It was vigorously opposed both at the commission and in the court by various bondholding groups, including the St. Joe Paper Company, a firm controlled by the Alfred I. duPont estate. Earlier commission reports, the first of which was issued in 1942, would have put control of the reorgan-

ering operation of this company's facilities at Portland, Ore., has been filed with the I.C.C. Four roads joined the terminal company in filing the application. These were the Oregon-Washington Railroad & Navigation Co. and its lessee, the Union Pacific; the Southern Pacific, and the Northern Pacific. The terminal is owned by the Oregon-Washington company, the N.P. and S.P. The present contract covering operation of the terminal has been in effect since 1932. The proposed amendments would, among other things, redefine some zones of the terminal to conform with additions and betterments, and make some changes in apportionment of operating expenses.

Toledo, Peoria & Western.—*New Director.*—J. Sellers Bancroft, vice-president of the Wilmington Trust Company, Wilmington, Del., has been elected to fill the unexpired term of the late Henry E. Perry of New York.

New Securities

Application has been filed with the I.C.C. by:

ST. LOUIS-SAN FRANCISCO.—To assume liability for \$5,085,000 of series 1 equipment trust certificates to finance in part 42 diesel-electric locomotives costing an estimated \$6,356,865.

Description and Builder	Estimated Unit Cost
25 1,500-hp, road-switching locomotives (Electro-Motive Division, General Motors Corporation)	\$147,949
14 1,500-hp, road-switching locomotives (Electro-Motive)	157,939
3 1,500-hp, booster locomotives (Electro-Motive)	148,998

The certificates, to be dated August 1, would mature in 15 annual installments of \$339,000 each, beginning August 1, 1952. They would be sold on competitive bids, with the interest rate to be set by such bids.

Division 4 of the I.C.C. has authorized:

NEW YORK, CHICAGO & ST. LOUIS.—To assume liability for \$1,950,000 of equipment trust certificates to finance in part 343 freight cars, costing an estimated \$2,446,452. (*Railway Age*, July 2, page 84.) The commission's report approved sale of the certificates, with a 3 per cent interest rate, at 99.509—the bid of Halsey, Stuart & Co. and one associate—which will make the average annual cost approximately 3.08 per cent. The certificates, dated July 15, will mature in 30 semiannual installments of \$65,000 each, beginning January 15, 1952. The certificates were reoffered to the public at prices yielding from 2.25 to 3.1 per cent, according to maturity.

WILLAMINA & GRAND RONDE.—To issue three non-interest-bearing promissory notes, totaling \$600,000, to evidence loans from its parent company, the Long-Bell Lumber Company. Proceeds of the loans will be used to construct a new 3.5-mile line from Gardiner Junction, Ore., to Gardiner.

Dividends Declared

Georgia R.R. & Banking.—\$1.75, quarterly, payable July 15 to holders of record July 1.

North Carolina.—7% guaranteed, \$3.50, semi-annual payable August 1 to holders of record July 21.

Northern of New Hampshire.—\$1.50, quarterly, payable July 31 to holders of record July 13.

Security Price Averages

	July 17	Previous week	Last year
Average price of 20 representative railway stocks	51.00	50.25	42.67
Average price of 20 representative railway bonds	91.59	91.45	91.06

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CONSTRUCTION

C.P. to Spend \$14 Million In Eastern Canada

A total of \$17,187,000 will be spent this year by the Canadian Pacific for improvements to track and right-of-way, and for new buildings, signals and other items in eastern Canada, from the head of the Great Lakes to the Atlantic seaboard; \$10,421,000 will be spent on track and roadbed, \$2,974,000 on bridges and buildings, and \$3,311,000 for other improvements. In addition, \$133,800 will be spent on electric lines radiating from Preston, Ont., and \$32,000 on Bay of Fundy steamships. Some \$238,000 has been spent in readying two Great Lakes freight and passenger ships for this summer season.

More than 215 miles of new main line rail costing \$4,075,000 is included in the total for track, along with \$2,445,000 for 880,745 new ties, \$1,623,840 for 713 miles of ballasting and bank restoration, and \$204,620 for welding of rail joints. Of the grand total, \$6,612,058 has been assigned to the Quebec district, where 48 miles of new rail will be laid, costing \$924,871, and \$747,700 will be spent to replace 260,665 ties. Part of the program to improve roadbed in the area is 290 miles of ballasting at a cost of \$632,300, as well as welding of rail joints at a cost of \$64,790.

Extension of Windsor Station, in Montreal, and facilities for handling of express, mail and baggage will cost \$1,147,000 and further building at St. Luc yard will take \$1,101,000. Construction of icing platforms at Glen yard will cost \$35,000. At Drummondville, Que., 1,500 feet of business track will be installed at a cost of \$10,130, and at Quebec City a new team track and roadway will cost \$30,900.

Baltimore & Ohio.—Estimated total cost of this road's Locust Point Marine Terminal improvement program is nearly \$1,000,000, the road has announced. The improvements, which will carry out B. & O.-modified recommendations made by the committee on port survey of the Baltimore Association of Commerce for improved handling of truck freight, will double tailboard space available for loading and unloading trucks at piers and will provide wider access roads and provisions for truck parking. Existing tailboard space at Locust Point now is sufficient for about 70 trucks, but this capacity is not always available because of traffic congestion on the present narrow access road. The new access road will be 60 feet wide.

Chicago, Rock Island & Pacific.—Grading for the new Council Bluffs (Iowa) yard (*Railway Age*, July 9, page 119) will be done under contract by the Orville Eblen Construction

Company at an estimated cost of \$33,290. The Fitzsimons & Connell Dredge & Dock Co. will remove accumulated silt from the Irondale (Ill.) slip at a cost of about \$23,500. At Chillicothe, Ill., Wolfes-Jensen & Co. will build a bridge consisting of two concrete abutments, five concrete pile piers and six 28-foot steel beam spans, at a cost of about \$40,875. A diesel servicing shop and service building will be constructed at Silvis, Ill., by the Henry R. Scheafer Company, at an estimated cost of \$165,000.

Pennsylvania.—Work is progressing rapidly on this road's construction project in Falls Township, near Morrisville, Pa., which will link its Morrisville freight yard with the new Fairless Works of the United States Steel Company on the Delaware river a short distance below Trenton, N. J. (*Railway Age*, June 25, page 108.) Work is under the general supervision of L. P. Struble, chief engineer of the P.R.R.'s Eastern region.

Plans call for a double-track siding, 9,000 feet long, to be laid on an earth embankment on an easy descending gradient into the steel plant and crossing the Pennsylvania's five main-line tracks and the Bristol Turnpike (U. S. Highway 13), over a series of seven reinforced concrete spans and a steel girder bridge. The project will cost an estimated \$1,250,000 and is expected to be completed by the end of this year. Contract for the project has been awarded to the Oxford Construction Company, Philadelphia. Grading work now in process is being handled by James D. Morrissey, Inc., also of Philadelphia, under subcontract. C. L. Towle, of Mr. Struble's staff, is resident engineer in charge for the railroad.

RAILWAY OFFICERS

EXECUTIVE

Lieutenant Colonel Wayne Smith has been appointed acting regional director of the Eastern region, DEPARTMENT OF THE ARMY, OPERATION OF RAILROADS, at New York, succeeding **Colonel Gustav Metzman**, who has returned to inactive duty, having been director of the Eastern region since August 28, 1950. Colonel Smith is on leave of absence from the position of supervisor of track of the Illinois Central at Mattoon, Ill.

FINANCIAL, LEGAL & ACCOUNTING

W. D. Steele, general claim agent for the ST. LOUIS-SAN FRANCISCO at Springfield, Mo., has retired. He is succeeded by **M. O. Truitt**, assistant general claim agent (*Railway Age*, July 9). Mr. Steele, who is 69 years

old, is a native of Cassville, Mo., and attended the University of Missouri. He began railroading with the Frisco in July 1909 as a clerk in the district claim agent's office at Monett, Mo., later held other positions in the claims department and in November 1948 was appointed general claim agent.

Mr. Truitt entered railroad service in March 1918 and went with the Frisco in September 1925 as claim agent at Memphis, being transferred in 1935 to Springfield, Mo., and promoted in 1948 to assistant general claim agent.

James H. Anderson, former attorney general for the state of Nebraska, will join the UNION PACIFIC's legal staff August 1 as general attorney for Nebraska and Iowa, succeeding **R. B. Hamer**, who recently resigned to enter private practice at Omaha.

OPERATING

Sidney Withington, engineering assistant in the operating department of the NEW YORK, NEW HAVEN & HARTFORD at New Haven, Conn., will retire on August 1, after 41 years of service with that road. Mr. Withington served as chief electrical engineer of the New Haven from June 1946 until December 1948, when he became engineering assistant. He was born at Boston on June 7, 1884, and received his M.E. degree in 1907 from Harvard Engineering School. He entered railroad service in 1910 with the New Haven and served successively as



Sidney Withington

chainman, draftsman, inspector, general foreman, assistant engineer, electrical engineer, chief electrical engineer and engineering assistant. Mr. Withington was chairman (1929-1932) of the Committee on Electricity of the American Railway Engineering Association; chairman (1929-1931) of the Electrical Section and second vice-chairman of Division IV, Engineering, of the Association of American Railroads; chairman (1920-1924) of the Committee on Heavy Electric Traction of the American Electric Railway As-

sociation; and chairman (1930) of the Connecticut section of the American Institute of Electrical Engineers.

William J. Barrett, general agent of the RAILWAY EXPRESS AGENCY at Milwaukee, has been appointed superintendent of the Jacksonville division at Jacksonville, Fla., succeeding **B. A. Marks**, whose transfer to the Florida division was reported in *Railway Age* July 9. Mr. Barrett has spent his entire business life with the R.E.A., holding the positions of route agent at Cleveland, general agent at Dayton, Ohio, and chief clerk to vice-president at Chicago. Since November 1950 he has been general agent at Milwaukee.

J. M. Loconto has been appointed trainmaster of the River division of the NEW YORK CENTRAL SYSTEM and **J. P. Nitti** has been appointed trainmaster of the Electric, Harlem and Putnam divisions.

E. E. Lambert has been appointed trainmaster of the Waycross district of the ATLANTIC COAST LINE at Waycross, Ga., succeeding **B. B. Vaughan**, who has been transferred to the Ocala district at Ocala, Fla.

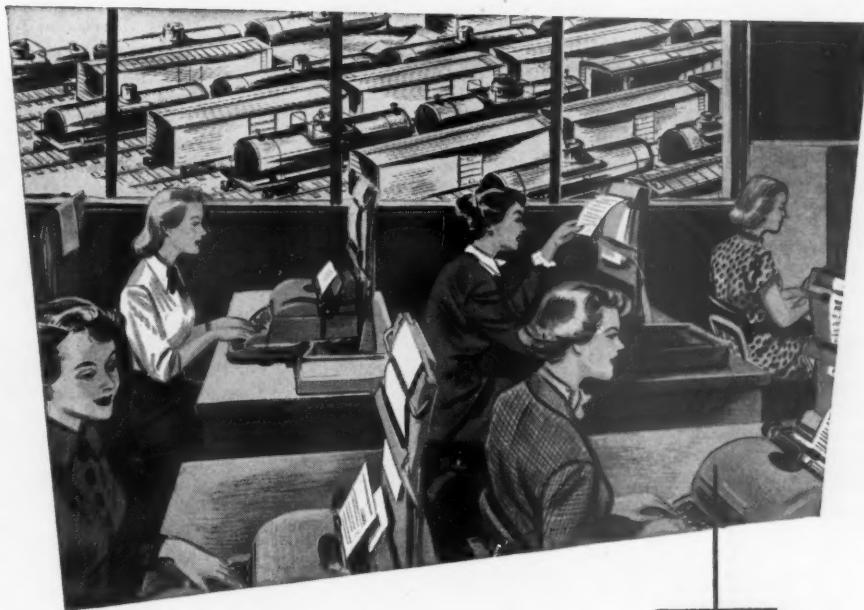
G. M. Greenbury, general supervisor of car service of the CANADIAN NATIONAL, has been appointed assistant chief of car service at Montreal.

John W. Demcoe, engineer maintenance of way of the Central region of the CANADIAN NATIONAL at Toronto has been appointed superintendent of the Hornepayne division at Hornepayne, Ont., succeeding **W. Edey**, who has been transferred to the Allandale division at Allandale, Ont. Mr. Edey replaces **J. H. Stevenson**, who



John W. Demcoe

has been appointed transportation assistant at Montreal. Mr. Demcoe was born at Kenora, Ont., and was graduated from the University of Manitoba (B.S. in C.E., 1939). He entered the service of the C.N. in August 1939 as a structural draftsman at Toronto, advancing to instrumentman a year later. In November 1942 he was promoted to assistant engineer and in



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February 1944 became assistant division engineer at London, Ont. He was appointed division engineer, Toronto Terminals, in May 1945 and became engineer maintenance of way of the Central region in February 1946.

D. M. Kerr, auditor of the GRAND TRUNK WESTERN at Detroit, has been appointed acting general manager of the CENTRAL VERMONT at St. Albans, Vt., succeeding **J. A. Rogers**, retired. **T. W. Prior**, previously selected as general manager of the C.V. (*Railway Age*, April 23), is seriously ill.

G. H. Sanderson, trainmaster of the CANADIAN NATIONAL at Gravenhurst, Ont., has been appointed assistant superintendent of the Hornepayne division at Hornepayne, Ont., succeeding **D. W. Emms**, promoted.

TRAFFIC

E. P. Schilling, city passenger agent of the CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC at Cleveland, has been appointed district passenger agent at Philadelphia, succeeding **W. E. Lutz**, who has retired under the pension rules of the road after 40 years of service.

Frank B. Martin, general freight and passenger agent of the CHICAGO & NORTH WESTERN at Green Bay, Wis., has retired. **Phillip J. McLaughlin**, formerly traveling agent at St. Paul, has been appointed grain, flour and coal agent, to succeed **Guy K. Rossman**, who has been made general agent, freight department, at that point (*Railway Age*, July 2).

As reported in *Railway Age* July 9, **Charles R. Reynolds** has been appointed general freight agent of the ILLINOIS CENTRAL at Atlanta. Mr. Reynolds was born at Bolivar, Tenn., and attended the University of Tennessee and Northwestern University. He joined the I.C. as file clerk in the traffic department at Chicago in 1916 and subsequently served in various capacities at Chicago and St. Louis. He was appointed assistant general freight agent at Atlanta on September 1, 1939, transferring to Chicago on January 1, 1945, and back to Atlanta on January 15, 1949.

William A. Murphy, general southwestern agent of the CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC at Kansas City, Mo., has been advanced to assistant freight traffic manager at Chicago. Appointed to take his place is **E. C. Derr**, general agent at Atlanta, Ga., who is in turn succeeded by **Paul A. Larson**, traveling freight agent at St. Louis. **F. A. Swanson**, general agent at Portland, Ore., has retired. His successor is **E. E. White**, traveling freight agent at Cleveland. A native of Chicago, Mr. Murphy started with the Milwaukee in 1908 in the freight traffic department at the Chicago general offices. Following

successive promotions, he was appointed general agent at Denver in 1935, three years later was transferred to Detroit, and in 1942 was further promoted to general southwestern agent at Kansas City.

MECHANICAL

Allan Beardshaw, general superintendent motive power and car equipment for the Western region of the CANADIAN NATIONAL, at Winnipeg, who retired recently (*Railway Age*, July 9), was born on June 27, 1891, at Lewisham, England. Beginning his career with the Grand Trunk (now C.N.) in 1912 as assistant foreman at Toronto, Mr. Beardshaw served in the Royal Navy in World War I. Following railroad service as locomotive foreman from 1920 to 1935, he was promoted to superintendent motive power and car equipment at Toronto, and in August 1943 was transferred to Winnipeg as general superintendent motive power and car equipment.

PURCHASES & STORES

P. W. Grayson, who recently retired as general storekeeper of the TEXAS & PACIFIC (*Railway Age*, June 25), was born at Austin, Tex., June 19, 1881, and began railroading in 1905 in the local freight office of the Missouri-Kansas-Texas. Mr. Grayson later served in the stores department of the Atchison, Topeka & Santa Fe and the Trinity & Brazos Valley (now Burlington-Rock Island), and in 1911 joined the T. & P.'s stores department as clerk, becoming general storekeeper in 1943.

H. L. Roth, purchasing agent of FRUIT GROWERS' EXPRESS, the WESTERN FRUIT EXPRESS and the BURLINGTON REFRIGERATOR EXPRESS, has been appointed manager of purchases and stores at Washington, D. C., succeeding **D. R. Elmore**, who retired on July 1 after 44 years of railroad and refrigerator car line service. Mr. Elmore entered railroad service in 1907 with the Illinois Central and from 1914 to 1918 was general storekeeper of the Monon at Lafayette, Ind. During 1919 Mr. Elmore was assistant supervisor of stores of the Eastern region of the U. S. Railroad Administration at New York. He joined the F.G.E. as assistant to general manager at its organization in 1920 and in April 1948 he was appointed assistant general manager. The following year he became manager of purchases and stores.

T. F. Lynch, general storekeeper of the MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE, at Minneapolis, has retired. He is succeeded by **H. E. Worts**. Mr. Lynch was born on May 21, 1886, at Waseca, Minn., and began railroading in 1904 in the Chicago & North Western's stores department. He joined the Soo Line in August 1911,

and subsequently held many positions in the stores department, until his promotion to general storekeeper.

ENGINEERING AND SIGNALING

Harold J. Bogardus, because of his health, recently requested relief from the full responsibilities of the engineering department of the Pere Marquette district of the CHESAPEAKE & OHIO, of which he was chief engineer and has now become special engineer (*Railway Age*, July 2). Born at Grand Rapids, Mich., September 23, 1892, Mr. Bogardus received a bachelor's degree in civil engineering from the University of Michigan in 1915, entered railroad service with the Pere Marquette the next year as instrumentman, and later advanced through the ranks until his appointment as assistant chief engineer in 1945. He became chief engineer in 1946.

H. J. Langlois, acting division engineer of the DELAWARE & HUDSON, has been appointed division engineer of the Champlain division, with headquarters as before at Plattsburg, N. Y. **C. W. Reeve**, division engineer, on leave of absence, has resigned to accept employment elsewhere.

H. J. Fast, district engineer of the Northern Ontario district of the CANADIAN NATIONAL at North Bay, Ont., has been appointed engineer maintenance of way of the Central region at Toronto, succeeding **J. W. Demco**, who has been appointed superintendent of the Hornepayne (Ont.) division. **H. O. Waddell**, division engineer of the Toronto Terminals division, succeeds Mr. Fast as district engineer at North Bay. **A. J. Latyn**, assistant division engineer, Toronto Terminals, has been appointed acting division engineer, succeeding Mr. Waddell.

OBITUARY

Charles E. Johnston, retired (1948) chairman of the WESTERN ASSOCIATION OF RAILWAY EXECUTIVES at Chicago, whose death, from cancer, on July 9 at his home in LaJolla, Cal., was reported in *Railway Age* July 16, page 76, was born on October 30, 1881, at St. Elmo, Ill. He first entered railroad service in 1897 as office and call boy on the Chicago & Eastern Illinois; subsequently served on the St. Louis Southwestern, the St. Louis & San Francisco (now St.L.-S.F.) and the Missouri Pacific; and later went with the Kansas City Southern, where he held positions as office engineer, division engineer, chief engineer and general manager. He was advanced in 1924 to vice-president and general manager, and in 1928 was elevated to the presidency of the K.C.S. He became chairman of the Western Association of Railway Executives in 1939.

Current Publications

FILM

Do Right By Our Nell. 16-mm., sound, color, 33 minutes. Produced by the Union Pacific under direction of General Claims Agent O. J. Wullstein and available to commercial and trade organizations for claim prevention work.

The second U. P. motion picture within three years to be aimed at freight loss and damage prevention. This was produced primarily for showing to freight-handling and train-service employees in the road's specially equipped loss and damage prevention auditorium car. To add a note of human interest, a plot—complete with romance between a locomotive engineman's daughter and a young switchman—has been added to the less appealing but even more basic issue of better freight handling. The film is a companion to the road's earlier "Who Done It?", which has been viewed by between 75,000 and 100,000 persons.

PAMPHLETS

Weather Engineering for Industry. 13 pages, illustrations. *Weathercasts of America, Railway Exchange bldg., St. Louis 1, Mo. Free.*

To the average person, the daily weather forecast gives the odds on whether to carry a raincoat, plan a picnic, or go out for lunch. To the industrial or utility production engineer, and to the company president concerned with profit and loss, new developments in weather techniques have a far larger meaning. Weathercasts of America was organized in 1946 to give a new type of weather service to business and industry. Its objective was to combine the best forecasting techniques with a detailed knowledge of the operating problems of its clients, thus providing a "tailor-made" weather service which, it believed, would become indispensable to many industries. This meant acquiring a knowledge in depth of the weather-affected operations of the specific types of companies served—a knowledge which would then be applied industry-wide. So Weathercasts specialized, beginning with gas companies. It interpreted the day's weather—and the hourly-corrected forecast—in terms of each company's own operating schedule. It next went into the electric utility field and then into construction. Since then the same principle has been applied to many other fields. Such scientific weather forecasting has obvious possibilities for the railroads, particularly those in snow country.

List of Maps Showing Railway Lines. 15 pages. *Association of American Railroads, Transportation bldg., Washington 6, D. C. Free.*

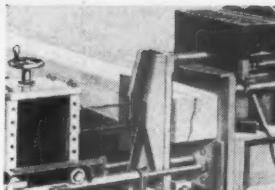
Lists more than 100 atlases, United States maps—general, regional and state—world maps, individual railroad maps and local maps showing railway lines. Sizes, prices, and names and addresses of publishers are included.

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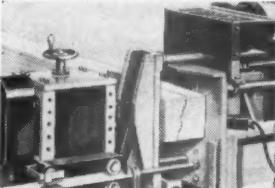
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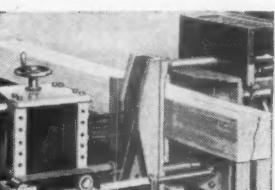
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Freight Operating Statistics of Large Steam Railways — Selected

Region, Road and Year	Miles of road operated	Locomotive-Miles			Car-Miles		Ton-Miles (thousands)			Road locos. on line			
		Principal helper	Train-miles	Light	Loaded (thous.)	Per cent loaded	Gross excl. locos. & tenders	Net rev. and non-rev.	Unstored	Serviceable	Stored	B.O.	
New Eng. Region	Boston & Maine.....1951	1,691	270,677	277,792	12,026	10,923	70.6	669,806	275,369	87	4	8.1	
	1950	1,700	272,073	279,684	12,603	10,546	67.8	661,250	269,845	91	7	7.5	
	N. Y., N. H. & Htd.....1951	1,766	302,570	302,648	16,805	11,918	69.6	752,033	328,506	90	..	11.8	
	1950	1,771	283,219	284,684	31,129	11,808	67.4	724,974	328,679	112	3	15.4	
Great Lakes Region	Delaware & Hudson.....1951	793	248,329	292,113	22,942	11,190	71.9	770,225	415,839	163	21	37	16.7
	1950	794	247,257	297,783	31,637	10,772	65.1	733,471	396,142	128	32	29	15.3
	Del., Lack. & Western.....1951	966	280,637	305,329	32,741	13,194	72.0	848,679	393,071	91	2	16	14.7
	1950	965	248,666	271,039	28,372	11,669	70.4	750,271	338,513	78	11	31	25.8
Central Eastern Region	Erie.....1951	2,245	623,017	631,175	32,493	34,274	68.1	2,131,812	879,958	188	31	22	9.1
	1950	2,231	595,793	613,582	43,634	31,855	68.7	2,003,075	839,568	172	16	37	16.4
	Grand Trunk Western.....1951	971	282,944	287,667	3,041	9,883	64.2	670,539	292,000	61	..	13	17.6
	1950	971	272,086	280,675	2,943	9,573	62.1	670,123	285,451	51	..	17	25.0
Pennsylvania System	Lehigh Valley.....1951	1,216	242,405	252,528	17,244	12,340	70.1	805,539	378,319	43	5	7	12.7
	1950	1,238	228,734	240,690	23,057	11,276	67.3	755,831	346,848	56	6	32	34.0
	New York Central.....1951	10,677	3,050,349	3,221,448	168,867	115,083	63.8	8,105,021	3,647,540	977	33	390	27.9
	1950	10,691	3,118,277	3,298,129	194,168	110,930	60.1	8,051,310	3,587,603	963	29	444	30.9
Southern Region	New York, Chic. & St. L.....1951	2,161	814,547	837,038	14,137	33,016	67.9	2,262,693	1,015,982	205	9	42	16.4
	1950	2,162	762,096	785,826	10,589	28,952	63.5	2,047,589	900,373	190	2	70	26.7
	Pitts. & Lake Erie.....1951	221	97,192	100,177	93	3,953	65.0	343,931	205,054	31	..	17	35.4
	1950	221	85,818	87,802	63	3,572	65.4	305,293	185,183	27	1	19	40.4
Pocahontas Region	Wabash.....1951	2,381	554,627	561,496	8,681	23,196	70.5	1,456,748	624,826	137	4	74	34.4
	1950	2,381	579,955	586,372	10,294	22,065	66.9	1,393,241	557,149	135	5	66	32.0
	Baltimore & Ohio.....1951	6,083	1,759,867	2,029,115	208,095	69,864	64.7	5,203,915	2,601,367	649	137	170	17.8
	1950	6,086	1,850,052	2,245,155	242,974	65,391	63.4	5,074,698	2,466,218	668	50	294	29.1
Central Eastern Region	Central of New Jersey.....1951	410	73,290	73,594	3,609	2,984	68.5	223,450	119,016	42	1	8	15.7
	1950	410	68,172	69,671	4,419	2,534	64.2	191,521	97,460	36	1	11	22.9
	Central of Pennsylvania.....1951	210	66,594	71,598	10,707	2,622	70.8	185,989	98,902	28	1	16	35.6
	1950	212	67,213	74,500	11,035	2,664	68.0	194,290	104,453	33	..	18	33.3
Southern Region	Chicago & Eastern Ill.....1951	886	123,486	123,486	3,328	5,141	65.9	334,905	158,155	26	..	2	7.1
	1950	886	125,356	125,356	2,577	4,503	67.6	296,876	141,085	37	..	1	2.6
	Elgin, Joliet & Eastern.....1951	238	95,343	96,399	350	3,802	67.7	292,286	160,639	39	..	4	9.3
	1950	238	102,889	105,006	..	3,814	62.5	306,014	163,130	39	..	1	2.5
Pennsylvania System	Pennsylvania System.....1951	10,045	3,222,971	3,505,228	372,592	138,718	68.1	9,562,020	4,702,885	1,279	35	283	17.7
	1950	10,042	3,074,373	3,360,946	360,437	127,327	63.6	9,050,656	4,273,367	1,213	..	423	25.9
	Reading.....1951	1,311	372,527	382,201	30,737	14,233	66.6	1,102,420	591,085	171	28	44	18.1
	1950	1,315	365,833	385,529	33,539	13,766	64.2	1,083,802	586,328	173	15	29	13.4
Southern Region	Western Maryland.....1951	837	186,965	216,301	23,182	6,850	65.2	550,604	308,158	121	11	23	14.8
	1950	837	175,411	207,545	24,432	6,427	60.1	540,222	294,293	140	42	18	9.0
Pocahontas Region	Chesapeake & Ohio.....1951	5,042	1,436,871	1,505,336	64,604	64,848	57.8	5,496,314	3,028,759	499	11	250	32.9
	1950	5,044	1,503,766	1,609,488	65,608	62,561	56.1	5,361,416	2,901,149	552	33	164	21.9
	Norfolk & Western.....1951	2,113	730,866	775,330	57,790	35,008	59.3	3,077,151	1,679,107	236	19	22	7.9
	1950	2,107	699,724	731,890	45,068	32,137	57.9	2,822,567	1,514,410	252	37	42	12.7
Southern Region	Atlantic Coast Line.....1951	5,434	932,339	938,040	16,191	28,991	62.1	2,002,797	892,103	350	17	103	21.9
	1950	5,507	851,334	858,397	14,089	24,275	61.7	1,691,641	754,570	303	15	86	21.3
	Central of Georgia.....1951	1,765	304,102	307,062	5,323	8,333	69.9	550,154	259,837	109	3	7	5.9
	Gulf, Mobile & Ohio.....1951	2,851	325,583	325,583	190	16,945	73.0	1,089,241	523,375	80	..	3	3.6
Northwestern Region	Illinois Central.....1951	6,539	1,522,804	1,529,120	53,000	54,311	64.5	3,874,664	1,807,598	574	2	77	11.8
	1950	6,543	1,481,403	1,484,895	53,859	51,652	61.6	3,785,909	1,718,623	543	..	104	16.1
	Louisville & Nashville.....1951	4,769	1,067,461	1,143,205	30,374	34,904	65.9	2,517,431	1,268,040	314	11	135	29.3
	1950	4,770	1,236,323	1,334,516	37,088	35,781	61.6	2,650,776	1,347,206	339	22	111	23.5
Central Western Region	Nash., Chatt. & St. Louis.....1951	1,049	206,121	210,516	4,132	6,810	74.4	430,829	207,657	72	..	7	8.9
	1950	1,049	210,777	214,394	4,214	6,512	73.8	407,598	191,792	65	..	3	4.4
	Seaboard Air Line.....1951	4,136	789,567	811,811	5,013	27,350	64.3	1,916,824	842,690	240	34	50	15.4
	1950	4,136	739,867	757,910	7,455	24,174	64.0	1,705,716	754,874	294	25	18	5.3
Southwestern Region	Southern.....1951	6,302	1,292,006	1,298,672	13,289	43,944	70.2	2,769,092	1,259,157	395	5	182	31.3
	1950	6,320	1,271,797	1,281,498	14,271	40,660	66.3	2,665,354	1,186,363	371	42	169	29.0
	Chicago & North Western.....1951	9,710	943,868	957,641	25,769	34,436	67.4	2,422,822	1,101,952	329	8	144	29.9
	1950	9,798	848,144	860,651	22,901	29,609	65.1	2,059,332	858,661	301	24	158	32.7
Central Western Region	Chicago Great Western.....1951	1,441	150,125	150,125	11,060	8,964	69.7	586,532	262,068	34	..	1	2.9
	1950	1,445	153,718	153,972	4,878	8,477	66.0	561,487	232,437	32	..	7	17.9
	Chic., Milw., St. P. & Pac.....1951	10,664	1,248,946	1,348,302	50,903	48,819	64.2	3,735,655	1,522,887	429	50	89	15.7
	1950	10,663	1,214,106	1,265,352	44,548	45,148	64.5	3,087,950	1,378,885	425	55	83	14.7
Central Western Region	Chic., St. P., Minn. & Omaha.....1951	1,606	211,554	219,894	12,072	5,829	64.7	413,607	185,580	72	..	28	28.0
	1950	1,606	174,417	180,114	8,297	4,915	67.7	321,393	132,997	69	1	44	38.6
	Duluth, Missabe & Iron Range.....1951	565	147,095	148,536	1,451	6,359	5						

Items for the Month of April 1951 Compared with April 1950

Region, Road and Year	Freight cars on line				G.t.m.per	G.t.m.per	Net	Net	Net	Car-	Net	Train-	Miles
	Home	Foreign	Total	B.O.	train-hr.	train-mi.	ton-mi.	ton-mi.	ton-mi.	miles	daily	miles	per
					Per	excl.loco	per	per	per	car-	ton-mi.	per	loco.
New Eng.	Boston & Maine.....	1,301	8,844	10,145	2.4	40,142	2,478	1,019	25.2	918	51.6	5,428	16.2
	1950	1,695	8,240	9,935	3.9	40,081	2,435	994	25.6	866	49.9	5,291	16.5
N. Y., N. H. & Htd.	1951	1,377	16,836	18,213	1.5	38,725	2,489	1,087	27.6	614	32.0	6,201	15.6
	1950	1,783	18,189	19,972	2.0	37,222	2,563	1,162	27.8	547	29.2	6,186	14.5
Delaware & Hudson.....	1951	2,493	6,268	8,761	5.2	58,971	3,115	1,682	37.2	1,574	58.9	17,480	19.0
	1950	2,877	6,329	9,206	7.9	55,079	3,142	1,609	36.8	1,299	54.2	16,631	17.6
Del., Lack. & Western.....	1951	4,979	11,007	15,986	7.6	46,927	3,071	1,442	29.8	805	37.5	13,564	15.5
	1950	6,433	10,522	16,955	10.0	46,592	3,067	1,384	29.0	676	33.1	11,693	15.4
Erie.....	1951	6,189	21,501	27,690	4.0	60,585	3,447	1,423	25.7	1,030	58.9	13,065	17.7
	1950	9,926	19,956	29,882	7.1	57,082	3,388	1,420	26.4	945	52.2	12,544	17.0
Grand Trunk Western.....	1951	3,448	9,811	13,259	5.5	48,643	2,401	1,046	29.5	675	35.6	10,024	20.5
	1950	4,248	9,818	14,066	8.3	47,655	2,480	1,056	29.8	621	33.5	9,799	19.3
Lehigh Valley.....	1951	3,610	11,647	15,257	6.9	66,939	3,367	1,581	30.7	837	39.0	10,371	20.1
	1950	5,619	9,961	15,580	8.7	65,242	3,345	1,535	30.8	711	34.4	9,339	19.7
New York Central.....	1951	51,683	123,066	174,749	4.7	43,876	2,697	1,214	31.7	697	34.5	11,388	16.5
	1950	67,939	102,664	170,603	8.3	42,839	2,619	1,167	32.3	728	37.5	11,186	16.6
New York, Chic. & St. L.....	1951	4,709	19,733	24,442	3.3	51,156	2,823	1,268	30.8	1,306	62.6	15,671	18.4
	1950	6,946	19,576	26,522	4.5	46,165	2,729	1,200	31.1	1,137	57.6	13,882	17.2
Pitts. & Lake Erie.....	1951	3,357	10,059	13,416	11.4	51,773	3,539	2,110	51.9	503	14.9	30,928	14.6
	1950	4,209	11,768	15,977	15.3	48,761	3,567	2,163	51.8	404	11.9	27,931	13.7
Wabash.....	1951	6,079	13,465	19,544	2.7	56,139	2,652	1,137	26.9	1,092	57.5	8,747	21.4
	1950	6,832	12,523	19,355	2.7	51,636	2,421	968	25.3	950	56.3	7,800	21.5
Baltimore & Ohio.....	1951	44,132	59,645	103,777	5.2	41,679	2,999	1,499	37.2	811	33.7	14,255	14.1
	1950	37,814	43,800	81,614	14.7	36,432	2,799	1,360	37.7	989	41.4	13,508	13.3
Central of New Jersey.....	1951	336	9,146	9,482	3.1	41,227	3,210	1,710	39.9	423	15.5	9,676	13.5
	1950	751	9,082	9,833	7.7	36,075	2,901	1,476	38.5	326	13.2	7,924	12.8
Central of Pennsylvania.....	1951	1,383	3,158	4,541	18.1	43,334	3,003	1,597	37.7	698	26.1	15,699	15.5
	1950	1,033	3,522	4,555	15.7	42,607	3,052	1,641	39.2	717	26.9	16,425	14.7
Chicago & Eastern Ill.....	1951	1,510	3,505	5,015	8.9	46,187	2,724	1,286	30.8	988	47.3	5,950	17.0
	1950	2,323	3,654	5,977	7.1	42,375	2,371	1,127	31.3	773	36.5	5,308	17.9
Elgin, Joliet & Eastern.....	1951	5,874	17,156	23,030	2.6	20,208	3,199	1,758	42.3	234	8.2	22,498	6.6
	1950	7,310	13,043	20,353	1.8	20,528	3,094	1,650	42.8	282	10.6	22,847	6.9
Pennsylvania System.....	1951	90,161	115,904	205,965	9.4	45,882	3,056	1,503	33.9	756	32.8	15,606	15.5
	1950	107,924	110,775	218,699	15.2	44,459	3,044	1,437	33.6	663	31.2	14,185	15.1
Reading.....	1951	10,678	22,205	32,883	3.2	38,606	2,960	1,587	41.5	615	22.2	15,029	13.0
	1950	11,794	18,721	30,515	9.3	37,528	2,963	1,603	42.6	627	22.9	14,863	12.7
Western Maryland.....	1951	4,615	3,524	8,139	3.0	43,571	3,008	1,684	45.0	1,238	42.2	12,272	14.8
	1950	4,595	3,117	7,712	2.4	43,318	3,122	1,701	45.8	1,247	45.3	11,720	14.1
Pocahontas.....	Chesapeake & Ohio.....	50,386	26,021	76,407	5.1	64,829	3,866	2,131	46.7	1,337	49.5	20,024	16.9
	1950	51,601	28,329	79,930	6.9	59,991	3,610	1,953	46.4	1,262	48.5	19,172	16.8
Norfolk & Western.....	1951	29,624	8,434	38,058	3.2	70,762	4,268	2,329	48.0	1,464	5.4	26,489	16.8
	1950	29,145	6,976	36,121	4.4	66,346	4,083	2,191	47.1	1,449	53.1	23,958	16.4
Southern Region.....	Atlantic Coast Line.....	11,311	20,427	31,738	2.4	34,702	2,159	962	30.8	948	49.7	5,472	16.2
	1950	12,931	15,220	28,151	5.9	32,012	1,996	890	31.1	858	44.7	4,567	16.1
Central of Georgia.....	1951	2,085	7,009	9,094	2.5	32,488	1,820	860	31.2	969	44.4	4,907	18.0
	1950	3,054	5,234	8,288	9.0	31,447	1,759	818	30.4	872	40.5	4,203	17.9
Gulf, Mobile & Ohio.....	1951	2,748	11,084	13,832	2.6	64,513	3,353	1,611	30.9	1,272	54.6	6,119	19.3
	1950	4,248	9,511	13,759	3.1	58,991	2,935	1,351	29.5	1,009	48.2	4,911	20.2
Illinois Central.....	1951	21,014	33,041	54,055	2.2	46,100	2,578	1,203	33.3	1,065	49.6	9,214	18.1
	1950	24,259	28,202	52,461	3.4	45,726	2,588	1,175	33.3	1,106	54.0	8,756	17.9
Louisville & Nashville.....	1951	30,720	16,910	47,630	8.7	37,011	2,366	1,192	36.3	860	35.9	8,863	15.7
	1950	33,820	15,898	49,718	9.5	34,550	2,151	1,093	37.7	924	39.8	9,414	16.1
Nash., Chatt. & St. Louis.....	1951	1,095	5,121	6,216	3.3	41,200	2,096	1,010	30.5	1,104	48.7	6,599	19.7
	1950	2,509	4,779	7,288	6.3	38,097	1,945	915	29.5	846	39.0	6,094	19.7
Seaboard Air Line.....	1951	8,992	15,306	24,298	2.3	45,055	2,482	1,091	30.8	1,136	57.3	6,792	18.6
	1950	10,263	13,751	24,014	2.0	41,486	2,363	1,046	31.2	1,008	50.5	6,084	18.0
Southern.....	1951	13,094	29,296	42,390	3.6	36,863	2,161	983	28.7	982	48.8	6,660	17.2
	1950	15,560	29,313	44,873	4.0	36,132	2,114	941	29.2	867	44.8	6,257	17.2
Chicago & North Western.....	1951	15,955	33,894	49,849	4.1	40,783	2,704	1,230	32.0	719	33.3	4,644	15.9
	1950	20,688	30,423	51,111	3.1	39,388	2,531	1,055	29.0	541	28.7	3,579	16.2
Chicago Great Western.....	1951	1,078	5,241	6,319	3.0	63,366	3,933	1,757	29.2	1,206	59.2	6,062	16.7
	1950	1,643	5,252	6,895	3.0	65,910	3,663	1,517	27.4	1,104	61.0	5,362	18.0
Chic., Milw., St. P. & Pac.....	1951	24,486	41,682	66,168	2.6	43,753	2,648	1,194	31.2	771	38.5	4,760	16.7
	1950	30,699	29,522	60,221	2.5	41,211	2,564	1,145	30.5	748	38.0	4,310	16.2
Chic., St. P., Minn. & Omaha.....	1951	1,021	9,377	10,398	2.7	26,919	2,025	908	31.8	600	29.1	3,852</	



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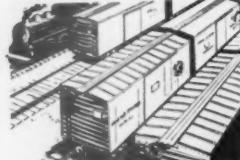
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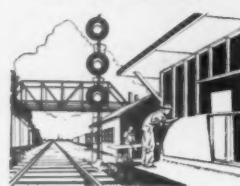
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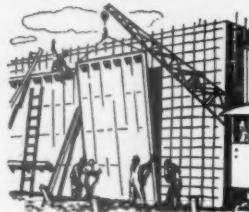
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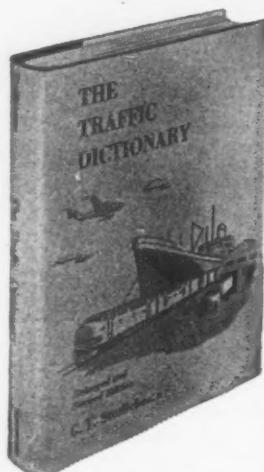
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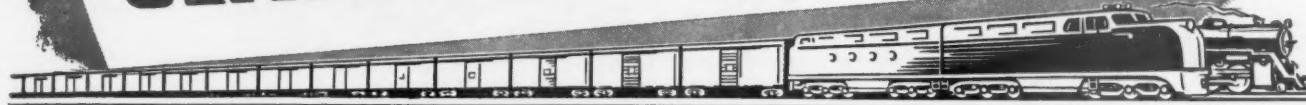
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